



English Language Arts

English as an Additional Language for Academic Success

A Course for
Senior 4 EAL Learners

ENGLISH LANGUAGE ARTS

*English as an Additional Language for
Academic Success:*

A Course for Senior 4 EAL Learners

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INTRODUCTION



INTRODUCTION

Course Description

This course is designed for advanced-level English as an additional language (EAL) students who wish to further develop the academic English language skills required for success in Senior Years and post-secondary education. Advanced EAL students who have studied English as a second language will benefit from integrated ELA/EAL courses, which reinforce and build proficiency in a range of language knowledge and skills required across the Senior Years curriculum and areas of post-secondary study. This course will help ensure success for advanced EAL learners in Senior 4 across a number of subject areas, with emphasis on the sciences, mathematics, and social sciences, as well as help students prepare for post-secondary study.

Manitoba Education, Citizenship and Youth is implementing a change from the term English as a Second Language (ESL) programming to English as an Additional Language (EAL) programming.

The change in terminology is appropriate as EAL is a more inclusive and encompassing term that suggests that learners of English may already speak a number of languages and dialects, of which English may be but one more. Ignoring the range of languages and dialects a person may already speak suggests that the other languages are not important.

In addition, the change in term reflects an orientation to language learning that values linguistic diversity and encourages bilingualism and multilingualism.

Through this course, students will develop skills such as interpreting and producing subject-area texts, various forms of student-led inquiry, and classroom interactions. They will interact with content drawn from various subject areas, such as science and business, to improve reading, writing, speaking, and listening, and to enhance their use of learning strategies. Students will have opportunities to acquire and use vocabulary relevant to a broad range of general, academic, and content-/topic-specific vocabulary, linguistic structures, processes, and tasks typical of various subject areas.

Schools may record students' marks as one full course, *Senior 4 ELA: EAL for Academic Success*, or as two half courses, *Senior 4 ELA: EAL for Academic Success Half Course I* and *Senior 4 ELA: EAL for Academic Success Half Course II*, whichever is most advantageous to the students.

The designation of two half courses accommodates students who may find a portion of *Senior 4 ELA: EAL for Academic Success* difficult. Instead of having to repeat an entire full-credit course, students could receive a half credit for the half course they successfully complete, and concentrate, instead, on a second attempt at the half course that presented them with difficulty.

Providing the course in two distinct halves also allows flexibility in how the teacher delivers the various topics. The first half-course would comprise Modules 1, 2, and the first half of Module 3; the second half would comprise the rest of the course.

Advanced EAL Learners

Assumptions about Senior Years Advanced EAL Learners and EAL Programming

EAL learning can be conceptualized as a series of **stages** through which students move from a very basic level of English language learning to more complex stages in which they develop English language skills essential for living and learning in their schools and communities. This course draws on the conceptualization of the EAL stages for secondary students as described in the Australian curriculum support document *ESL Companion to the English CSF, Carlton: Victoria*. In this document, secondary EAL learners move through four distinctive stages of EAL and academic learning. The fourth stage, that of the advanced EAL learner, includes a point at which EAL learners “transition” from EAL-focused programming and instruction to “mainstream” programming and instruction.

However, learners will follow individual pathways through the various stages of EAL learning. The time taken to move to an advanced stage of EAL learning will vary according to personal and program factors. Personal factors that may influence the time required are the student’s prior schooling experiences, motivation, physical and cognitive characteristics, interests, and abilities. The differences or similarities between the student’s prior language or languages and English may also be an important factor. Programming factors such as access to appropriate programming, the receptivity of the classroom and school environment, and the intensity and extensiveness of specialized EAL supports may also play a role in determining the time students need to reach an advanced stage of EAL development.

There is no set time during which the students will remain in this advanced EAL stage. Students will differ in the time required to reach the transition point at which they can be considered to be proficient and able to succeed in mainstream classes with minimal accommodations and adaptations. Some EAL learners may reach the transition point early in the Senior Years but may continue to benefit from EAL-informed approaches.

This course is intended to help advanced EAL learners reach that critical transition point where they will be proficient in English and successfully meet the academic language requirements of a range of Senior 4 courses and subjects.

General and Specific Learning Outcomes

Taking into consideration the theoretical perspective adopted in developing this course (see the following section) and acknowledging the learners who are the focus of this course, the student learning outcomes selected are:

GLO 1 Students will comprehend and develop a personal response to various academic texts.

Specific Learning Outcomes

Students will...

- 1.1 Engage with increasingly difficult oral and/or visual texts to draw essential understanding from typical subject-area topics.
- 1.2 Respond to texts with increasing independence.
- 1.3 Develop and express a personal position in a variety of ways (e.g., express likes/dislikes, opinions, connections with personal experience).
- 1.4 Show an awareness of organizational patterns, discourse features, and writing techniques in a range of subject-area texts.
- 1.5 Examine and interpret various visual media for academic purposes.
- 1.6 Interpret a range of texts from across the curriculum in terms of their purpose, audience, and context.
- 1.7 Evaluate a given text with reference to its validity and quality, justifying their own interpretation of text in relation to the interpretation of others.

GLO 2 Students will use the English language to effectively accomplish academic tasks drawn from across the curriculum.

Specific Learning Outcomes

Students will...

- 2.1 Show sufficient control over linguistic structures and features to complete typical tasks in a variety of subject-area classrooms.
 - 2.1.1 Analyze and edit texts for word choice, grammatical structures, and discourse features.
 - 2.1.2 Use standard Canadian spelling, capitalization, and punctuation conventions with reasonable accuracy.
 - 2.1.3 Use developing control of grammatical structures and discourse features to define, explain, describe, analyze, compare, classify, infer, argue, summarize, paraphrase, synthesize, and evaluate.
 - 2.1.4 Refine pronunciation to increase intelligibility.
- 2.2 Use several visual techniques (e.g., graphic organizers, presentation programs) to convey factual information and clarify relationships.

In this course, the term "text" includes oral, written, and visual texts, unless otherwise indicated. As teachers refer to the list of general and specific learning outcomes, it is important to remember that "various academic texts" includes oral texts.

- 2.3 Produce a variety of short and extended text forms necessary for subject-area tasks, taking into consideration audience, purpose, and context.
 - 2.3.1 Use the structures and language features appropriate to the text type. (Students can use: subordinate adverb clauses to demonstrate time relationships; passive voice in science experiments.)
 - 2.3.2 Demonstrate an increasing awareness of North American rhetorical forms (e.g., linear argument).
 - 2.3.3 Produce effective oral presentations.
- 2.4 Use the steps of the writing process to produce effective extended texts by
 - prewriting (gather and focus ideas, plan the text, research, organize the text)
 - writing a first draft
 - enhancing and improving drafts through peer-editing and self-editing
 - publishing in appropriate physical format

GLO 3 **Students will use the English language to explore and manage ideas and information in topics drawn from the Senior Years curriculum.**

Specific Learning Outcomes

Students will...

- 3.1 Seek, organize, and synthesize information from multiple sources to form, support, or revise a position
- 3.2 Develop and implement a plan for researching topics from across the curriculum.
 - Formulate questions to guide inquiry.
 - Formulate and revise a position on a topic.
 - Search effectively for resources (e.g., primary, print, and online) to accomplish a particular task.
 - Evaluate validity and quality of resources.
 - Choose appropriate organizational structures to achieve the intended purpose of the task.
- 3.3 Quote from or refer to sources as required; document sources accurately.

GLO 4 **Students will use the English language to build and participate in community.**

Specific Learning Outcomes

Students will...

- 4.1 Use language to encourage, support, and work with others.
- 4.2 Communicate effectively to work with others in most formal learning situations about issues and tasks drawn from various subject areas.

- 4.3 Use clear and respectful language to express personal opinion and to respond to others.
- 4.4 Manage group action (planning, monitoring, and assessing group activities).
- 4.5 Experience and consider academic texts drawn from different perspectives.
- 4.6 Respond to and critique a variety of individual perspectives in academic texts and group discussions.
- 4.7 Use the English language to participate in community, both local and global.

GLO 5 **Students will use the English language to celebrate individual and group successes, and enhance their knowledge of and ability to apply cultural knowledge in educational settings.**

Specific Learning Outcomes

Students will...

- 5.1 Identify common themes and symbols of contemporary Canadian culture drawn from various sources.
- 5.2 Analyze and use the appropriate level of formality for a variety of social and academic contexts and purposes.
- 5.3 Analyze ways in which languages and texts affect and are affected by contemporary culture.
- 5.4 Show understanding of the effect of cultural background on attitudes and communication patterns.
 - 5.4.1 Demonstrate openness to working with members of different cultural and linguistic groups.
 - 5.4.2 Begin to interpret North American approaches to humour.
- 5.5 Identify and analyze the value of English as an international language for themselves and for the global society.
- 5.6 Evaluate texts for purpose, bias, and implications.
- 5.7 Select and present ideas and information, keeping in mind the intended audience.

GLO 6 **Students will know and use effectively metacognitive, cognitive, and social and affective learning strategies to enhance learning.**

Specific Learning Outcomes

Students will...

- 6.1 Students will know and use effectively metacognitive learning strategies to achieve greater independence in planning their learning.
 - 6.1.1 Use advance organization to preview a learning task.
 - 6.1.2 Use organizational planning to choose good organizational strategies and to plan for the way the task should be handled.

- 6.1.3 Use directed attention to decide in advance to focus on a learning task and to avoid and ignore irrelevant distractors.
- 6.1.4 Use functional planning to plan for and rehearse linguistic components of a language task.
- 6.1.5 Use selective attention to decide in advance to pay attention to important, specific information, often by scanning for key words, concepts, and linguistic markers, and then to maintain this behaviour throughout the task.
- 6.1.6 Use self-monitoring to check, verify, and correct one's understanding and performance during a language task.
- 6.1.7 Use problem identification to explicitly identify the problem that needs to be resolved so that the task can be completed.
- 6.1.8 Use self-evaluation to check one's language, strategy use, and ability to perform a task.
- 6.2 Students will know and use effectively cognitive learning strategies to interact with and manipulate, mentally or physically, the material to be learned and to apply a specific technique to a learning task.

Specific Learning Outcomes

Students will...

- 6.2.1 Use resourcing to access and work with various reference materials: books, the Internet, and audiovisual sources.
- 6.2.2 Use repetition to imitate a language model and to practise.
- 6.2.3 Use grouping of items with common characteristics to classify order and label material; use grouping to recall information about previously grouped items.
- 6.2.4 Use note taking to write down key words or concepts in abbreviated written, numerical, or graphic form to accomplish a language task.
- 6.2.5 Use deduction and induction to consciously apply learned or self-developed rules to produce or understand the target language.
- 6.2.6 Use substitution to select alternate approaches to successfully complete a language task.
- 6.2.7 Use elaboration to relate new information to prior knowledge.
- 6.2.8 Use imagery in the form of mental or actual pictures as well as graphic organizers or representations to represent information.
- 6.2.9 Use summarization to make a mental or written summary of language and information presented in a task.
- 6.2.10 Use translation to change language in a verbatim manner from one language to another.

- 6.2.11 Use transfer to make a language task easier by applying previously acquired linguistic knowledge to it.
 - 6.2.12 Use inferencing to guess the meanings or usage of unfamiliar language, to predict outcomes, or to fill in missing information.
 - 6.2.13 Use recombination to create a meaningful complex sentence or lengthier language sequence by combining known elements in a new way.
- 6.3 Students will know and use effectively social and affective learning strategies to assist in learning by interacting with others.

Specific Learning Outcomes

Students will...

- 6.3.1 Use questioning for clarification to ask for explanations, verification, rephrasing, or examples about the material or the task at hand.
- 6.3.2 Use co-operation to work together with peers to solve a problem, share information, check a learning task, model a language activity, or get feedback on one's written or oral performance.
- 6.3.3 Use positive self-talk to reduce anxiety.

FROM THEORY TO PRACTICE:
THEORETICAL PERSPECTIVES AND INFLUENCES



FROM THEORY TO PRACTICE

The development of this course was influenced by research in second language learning in general and EAL specifically. This has been reflected in the course content and instructional design. This research is summarized in the following sections. To a large extent, this section is an adaptation of Chapter 1, Section 2 of *A Sourcebook for Integrating ESL and Content Instruction Using the Foresee Approach* by Richard Kidd and Brenda Marquandson (1994). Teachers implementing this course should be familiar with the basic elements of this approach.

Contemporary EAL teaching approaches have been influenced by theoretical and practical developments in diverse fields. This course is built upon what may be termed as an integrated EAL and content-based approach. It has also been influenced by other approaches and methodologies.

This section is divided into two subsections. The first describes some of the more important theoretical foundations that underlie integrated EAL and content-based approaches. The second part of this section acknowledges additional specific teaching approaches and methodologies that are reflected or incorporated into the design of this course.

Foundations of Integrated EAL Instruction

The foundations selected for consideration fall into three categories: language acquisition, psychology, and education. The circles in Figure 1.1 represent the three categories and identify educational researchers and developments that have made significant contributions to these categories.



Figure 1.1: Foundations of Integrated EAL Instruction

Language Acquisition Foundations

Stephen Krashen

The language acquisition theory of Stephen Krashen (1982) has had an enormous influence on recent practices for teaching an additional language. Krashen's theory itself pertains mainly to the acquisition of the linguistic rules of a language (e.g., sentence structures and verb tenses). Nevertheless, his theory encourages a particular methodological orientation that has major consequences for both communicative language teaching (CLT) and integrated language and content instruction.

Krashen argues that there are two distinct ways of gaining knowledge of a language: acquisition and learning.

- **Acquisition** is the process of internalizing the vocabulary and rules of a language subconsciously, without apparent effort, the way young children pick up their first language (L1).
- **Learning** is the planned, conscious study of language, usually involving a great deal of memorization and deliberate practice. The latter is the route typically followed by adult learners of an additional language (L2).

Acquired language rules are subconscious and implicit ("in your head"), whereas learned rules are conscious, explicit, and mentally accessible for analysis and description. Krashen claims that acquisition and learning are two completely separate processes, and that learning can never result in acquisition. The main value of learned rules, he insists, is that they can serve a "monitor" function, providing L2 speakers with conscious knowledge they can use for editing or correcting utterances. Krashen claims that acquired linguistic knowledge, such as the rules of L1, cannot result from learning.

How, then, can students "acquire" an additional language? According to Krashen, L2 acquisition closely resembles L1 acquisition. Contrary to the popular opinion that the ability to acquire languages in a natural way declines after childhood, older learners can actually "pick up" languages as children do. That is, they can make subconscious use of their innately endowed **language acquisition devices** (LAD) to acquire the rules of a language, and this process can be automatic and relatively effortless. All that it requires, Krashen maintains, is a rich, appropriate, and plentiful supply of **comprehensible input**. Acquisition will inevitably occur if learners are exposed to a sufficient quantity of linguistic messages that they can understand, if they focus on the meaning (not the form) of those messages, and if they have a positive attitude and motivation towards receiving the messages. The LAD functions automatically, allowing learners to acquire the rules and structures of L2 in a definite sequence or "natural order."

The instructional implications of Krashen's theory are straightforward. The proper way to teach an additional language, Krashen argues, is to provide students with a plentiful supply of good, comprehensible input in a comfortable, motivating learning environment. If this is accomplished successfully, acquisition will take care of itself—effortlessly, automatically, and naturally. The critical element, of course, is for the teacher to provide the right input. One of the keys to doing this effectively is to give students plenty of contextual clues to meaning (e.g., pictures, physical objects, and body language).

This strategy is the basis of Krashen and Terrell's (1983) **Natural Approach** for teaching second languages. It is easy to see why the main procedures of this approach—and Krashen's ideas more generally—have had such a significant impact on communicative language teaching. No longer do second language teachers consider it imperative or even advisable to encourage the formal, conscious study and learning of vocabulary and grammar. Acquisition is now regarded by many as the correct route to communicative competence, and instruction tends to reflect this priority.

Although discrete-point grammar instruction, mechanical pattern practice, and instant and direct error correction—which dominated second/international language instruction in the past—are generally frowned upon in the communicative classroom, attention to grammatical patterns continues to play an important role. This is true particularly for adolescent and adult learners, who are often intrigued by—and find it helpful to understand—structural differences between their own and the target language. The role of grammar is to support the exchange of meaning, the informational contents, and the communicative purposes dealt with in the classroom.

Krashen's theory is frequently cited in support of the practice of integrating language and content, mainly on the grounds that the various content areas are a rich and almost limitless source of interesting and motivating comprehensible input. Both EAL and regular classroom teachers can take advantage of the potential of content area work to promote language acquisition. Nevertheless, caution must be exercised with the supposition that the conventions, rules, and skills of academic language can be automatically "acquired" in the way that Krashen suggests. Teachers should not assume that EAL students will somehow absorb academic language through mere exposure to it. Young children, after all, acquire most of the structures of their L1 before beginning school, but they still have to learn how to read and write. Many of the facts and skills of academic language have to be learned (on a conscious level) by L2 students as well.

Jim Cummins

Probably no single researcher has had a greater influence on the movement towards integrated second language instruction than Jim Cummins. His first major contribution (1979) was his suggestion that there are important differences between **basic interpersonal communicative skills** (BICS) and **cognitive academic language proficiency** (CALP). When he coined these terms, the emphasis of EAL instruction was primarily on BICS or, in other words, "communicative competence." The idea that CALP entails a different sort of competence was really the starting point of the current trend towards integrating language and content. Unfortunately, Cummins did not initially define the differences between BICS and CALP in any substantive way, and the two terms aroused a good deal of controversy in the literature. He subsequently abandoned them in favour of a more rigorous way of characterizing the differences between communicative and academic language proficiency.

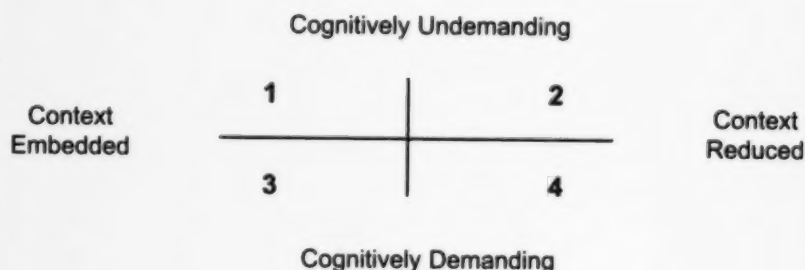
This newer scheme (Cummins, 1983) contrasted the two kinds of proficiency in terms of two independent criteria: **cognitive demand** and **context embeddedness**. One difference between communicative and academic language tasks is that the latter are more difficult and more mentally challenging. Delivering a formal speech and writing an academic essay, for example, are far more cognitively demanding than chatting over coffee or writing a friendly letter.

The second difference between communicative and academic language tasks concerns the degree to which language is supported by contextual information of various sorts. Conversational language tasks are generally easy to perform because they are **context embedded**—that is, speakers or listeners can make use of many cues besides language in producing and interpreting messages. These include stress and intonation patterns in speech, gestures, facial expressions, and visual supports of various kinds (e.g., the physical surroundings, objects that both speaker and listener can see and touch, and sometimes pictures or diagrams). Another attribute of contextual support is the frequent opportunity of negotiating meaning as a conversation progresses: the participants can repeat themselves, rephrase their thoughts, ask for clarification, exercise control over the topic under discussion, and so forth. In contrast, these various contextual supports are far less common in academic language, which tends to be **context reduced**. Language tasks are more difficult for students when extralinguistic cues are unavailable and meanings are encoded exclusively in the words themselves.

Since cognitive demand and context embeddedness are independent criteria, language-task difficulty can vary along two dimensions, as shown in Figure 1.2 (Cummins, 1983). The language of everyday communication is cognitively undemanding and context embedded, so Cummins's BICS fall into quadrant 1. Academic language tends to be the opposite—cognitively demanding and context reduced—and thus lies in quadrant 4.

Considering all this from an instructional perspective, it is obvious that moving directly from quadrant 1 to quadrant 4 will be difficult for most EAL students. This explains why the former scheme of teaching BICS first and CALP second is ineffective. The preferred alternative is to lead students through transitional stages along the way to academic proficiency. Such stages are represented by quadrants 2 and 3. In quadrant 2, language tasks are context reduced but within students' abilities because they are cognitively undemanding. In quadrant 3, the potential domain of much successful content area instruction, difficult material is made comprehensible via deliberate, carefully planned contextual support (e.g., pictures, diagrams, objects, and videotapes). At this point Cummins's theory intersects with Krashen's, both emphasizing the value of context in making input comprehensible. Thus, "content-based" EAL approaches that draw on these theories operate mainly in the realm of quadrant 3.

Figure 1.2: Dimensions of Language Proficiency



Language Learning Strategies

The middle and late 1970s witnessed a sudden growth of interest in **language learning strategies**. Researchers were motivated by the conviction that "good language learners" were able to acquire additional languages successfully because they knew how to make use of effective strategies for memorizing L2 items, analyzing and making sense of the L2 structures, and creating opportunities for worthwhile practice.

The thrust of research was to discover, through observation, student introspection, and a variety of other methods, just what these effective strategies were, and to classify them. Rubin (1975, 1981) identified a relatively small number of useful strategies, including

- monitoring (of one's own and others' speech)
- systematic memorization
- inductive inferencing (guessing meanings from context)

Naiman et al. (1978) listed five major categories of good L2 learning strategies:

- Taking a positive, active approach to the task
- Approaching the L2 as a system and constantly analyzing that system
- Using language for communicative purposes
- Coping with the affective demands of L2 learning
- Constantly monitoring one's L2 performance

This interest in strategies continued into the 1980s with the work of Oxford (1985, 1990). Her classification scheme is the most complex of all, as she distinguishes between

- direct strategies (three types: memory, cognitive, and compensation)
- indirect strategies (three types: metacognitive, affective, and social)

These six main categories include 19 subcategories in all, which in turn encompass a total of 62 specific learning strategies. One of the notable merits of Oxford's (1990) detailed book on the topic is that it presents a wide variety of useful exercises and activities for teaching these many strategies to L2 students.

The interest in language learning strategies was paralleled by a growing interest in the nature and function of cognitive strategies for learning in general (e.g., Weinstein and Mayer, 1986; Mayer, 1988). Researchers have made considerable progress in discovering and classifying a variety of mental strategies that students can learn to apply to their learning tasks to accelerate the acquisition of academic knowledge and skills.

The need for shifting emphasis from the "what" of learning (i.e., the subject-area content) to the "how" is well expressed in the following passage from Norman (1980):

It is strange that we expect students to learn yet seldom teach them about learning. We expect students to solve problems yet seldom teach them about problem solving. And, similarly, we sometimes require students to remember a considerable body of material, yet seldom teach them the art of memory. It is time we made up for this lack, time that we developed the applied disciplines of learning and problem solving and memory. We need to develop the general principles of how to learn, how to remember, how to solve problems, and then to develop applied courses, and then to establish the place of these methods in an academic curriculum. (97)

For a thorough and easily accessed review of the research in the teaching of learning strategies, consult Weinstein and Mayer (1986).

Chamot and O'Malley (1986, 1987, 1989; O'Malley and Chamot, 1990) have drawn heavily upon research in both types of learning strategies (language and general cognitive) in formulating their Cognitive Academic Language Learning Approach (CALLA). Their classification scheme is discussed later in this section.

Psychological Foundations

Cognitive Psychology

Modern L2 teaching practices, whether communication- or context-oriented, have been heavily influenced by the principles of **cognitive psychology** (see Ausubel, 1968; Anderson, 1985; Chastain, 1976, for more discussion). Although an extensive review of this topic is impossible here, a brief discussion of three cognitive principles that have special significance for integrated instruction follows.

First, learners are **active** processors of information. There is little credibility in the behaviouristic view that students should be treated as passive receptacles into which knowledge can be poured little by little, with learning resulting as a conditioning process. Modern integrated L2 teaching emphasizes the learner's active involvement with the material to be assimilated, both the language and the content. Activities such as drill, mechanical practice (written or oral), and rote memorization are to be avoided in the classroom in favour of more stimulating and creative learning tasks. As mentioned above, an important focus of academic instruction should be the development of appropriate **learning strategies**, that is, mental processes for facilitating acquisition of knowledge and skills.

Second, learning is facilitated—indeed, is only possible—when students are able to fit the new information they encounter into their existing **knowledge frameworks**. Good teachers, therefore, make special efforts to activate learners' background knowledge ("schemata," plural of "schema") as a first step in introducing any topic. The lessons in the content-based EAL approaches are designed for this purpose.

Third, there are two basic avenues to understanding written or spoken language. Comprehending new material by bringing to bear one's prior knowledge is known as **top-down processing**, while comprehension based on the careful decoding of linguistic messages (vocabulary, structures, and style) is called **bottom-up processing** (Carrell, 1983). Good teaching methods activate both avenues to understanding.

Humanistic Psychology

From a **humanistic psychology** perspective, as emphasized in the work of psychologists such as Carl Rogers (1956) and Abraham Maslow (1971), and also in the writings of language teaching practitioners such as Gertrude Moskowitz (1978), instruction is most effective when it appeals to, and satisfies, the emotional (affective) needs of learners. Moskowitz expresses this view poignantly:

Affective education is effective education. It works on increasing skills in developing and maintaining good relationships, showing concern and support for others, and receiving these as well. It is a special type of interaction in itself, consisting of sharing, caring, acceptance, and sensitivity. It facilitates understanding, genuineness, rapport, and interdependence. Humanistic education is a way of relating that emphasizes self-discovery, introspection, self-esteem, and getting in touch with the strengths and positive qualities of ourselves and others. (14)

The result of such education, says Moskowitz, will be **self-actualization**, which is a powerful inherent need in humans. When students see the subject matter as self-enhancing, they will view it as relevant to their lives, and "they will then become more motivated to learn." (13)

Although integrated instruction does not normally include the sorts of humanistic language-learning activities advocated by Moskowitz, the Foresee Approach certainly promotes all of these values. Teachers should never underestimate the learning potential of children. Given instruction, encouragement, and guidance that enhances their sense of self-worth, they are capable of amazing achievements. Approaches that draw on these perspectives equip the teacher with **a way of setting the students up for success**. When this is accomplished, the students are motivated and success almost invariably follows.

L.S. Vygotsky

The great Russian psychologist L.S. Vygotsky died in 1934, but his ideas about cognition and learning have recently begun to gain the influence they deserve. Two of his key concepts are outlined below, along with a brief description of how they relate to the theory and practice of integrated instruction.

One of Vygotsky's major insights about learning was that "mental functioning occurs first between people in social interaction and then within the child on the psychological plane" (Rogoff and Wertsch, 1984, 1-2). Thinking, reasoning, and problem solving are initially carried out on the **interpsychological plane**, as collaborative endeavours involving several participants (e.g., parent and child, teacher and child). This becomes the basis for these processes to be internalized by the child, at which point they become integrated into (and in fact help create) the **intrapsychological plane**.

Vygotsky's second key concept relates to the dynamics of this developmental process, specifically, how individuals proceed from lower stages of psychological functioning to higher stages. To explain this, Vygotsky proposed a construct which he called zone of proximal development (ZPD). He argued that it is simplistic to define children's developmental levels only in terms of what they can do on their own (as, for example, on written tests). Any child can reasonably be regarded as having two levels of development:

- **actual development**—the level of individual, independent functioning
- **potential development**—the level at which the child can function "while participating in instructional social interaction" (Rogoff and Wertsch, 1984)

Vygotsky (1978) defined the ZPD as

the distance between the actual development level as determined by independent problem solving and the level of potential development as determined by problem solving under adult guidance or in collaboration with more capable peers. (86)

In contrast to Jean Piaget, who maintained that instruction should be appropriate to developmental stages that have already been completed, Vygotsky (1956) argued that

instruction is good only when it proceeds ahead of development. It then awakens and rouses to life those functions which are in a stage of maturing, which lie in the zone of proximal development. It is in this way that instruction plays an extremely important role in development. (278)

Vygotsky's theory underlies a number of recent pedagogical notions. One of the best known is the concept of **scaffolding** (Wood, Bruner, and Ross, 1976). A teacher using this technique "monitors the child's current level of skill and supports or 'scaffolds' the child's extension of current skills and knowledge to a higher level of competence" (Rogoff and Gardener, 1984, 97). A second related notion is Tharp and Gallimore's (1988) conception of teaching as **assisted performance**: "Teaching can be said to occur when assistance is offered at points in the ZPD at which performance requires assistance." (41)

Tharp and Gallimore's definition of teaching is a profoundly insightful one. EAL students need to be assisted through two different—although related—zones of proximal development: the language zone and the content zone. They will not find it easy to traverse either zone without expert guidance from the teacher, whose role in the classroom obviously transcends that of being a mere facilitator of interesting activities. Good teaching demands both skills at estimating each student's ZPD and expertise in providing instruction that will foster the internalization of social experiences. The Foresee Approach thus recognizes an important place for what Chamot and O'Malley (1989) call teacher-directed activities, which are essential if students are to receive proper assistance through their ZPDs. This matter will be explored further in the discussion of the whole language approach.

Educational Foundations

Language across the Curriculum

Like the other two modern movements to be discussed in this section, the Whole Language Approach and co-operative learning, the **Language across the Curriculum** approach for L1 education has been adapted for L2 instructional purposes. In fact, this movement is the genesis of the current trend towards integrating language and content, its main tenet being—as the name suggests—the idea of teaching language skills through all the subject areas in the curriculum.

The language across the curriculum movement was originally triggered in Great Britain by the Bullock Report, entitled *A Language for Life* (1975). One key observation of the Bullock Commission was that, in the first five years, a child accomplishes an incredibly complex task in learning his or her L1, and learns more about his or her environment than in any subsequent five-year span. For the young child, personal cognitive growth and language growth proceed in concert. Language is the “means” and personal growth is the “end,” in the Bullock Report’s terms. The two are “interlocking” from birth to age 5. But this interlocking, the report insists, should be continued when school begins, not replaced by an approach that fractures and separates language learning from content learning:

What we advocate here is no more than that this interlocking of the means and the ends should be maintained . . . throughout the years of schooling. To achieve this we must convince the teacher of history or of science, for example, that he [or she] has to understand the process by which his [or her] pupils take possession of the historical or scientific information that is offered them; and that such an understanding involves . . . paying attention to the part language plays in learning. (188)

This insight directly underlies and supports the current trend towards integrated L2 instruction.

A second important insight advanced in the Bullock Report was that each school subject area (e.g., science, social studies, and mathematics) entails its own special variety of academic language:

In general, a curriculum subject, philosophically speaking, is a distinctive mode of analysis. While many teachers recognize that their aim is to initiate a student in a particular mode of analysis, they rarely recognize the linguistic implications of doing so. (189)

The Bullock Commission was concerned mainly with developing the abilities of students to handle the differing first language academic demands of various curriculum subjects. The need for such specialized language instruction is even more acute when students are attempting to cope with curricular demands in a second language. All teachers of EAL students, whether in EAL or regular classrooms, should be aware of the unique linguistic demands of each subject area with which their students have to deal. (See Gillham, 1986, for several insightful articles on this topic.) The Foresee Approach provides explicit guidelines for identifying these special linguistic features and for teaching them through content area work.

The Whole Language Approach

Another L1 teaching movement with important consequences for integrated EAL instruction is the **Whole Language Approach**, which one supporter describes as no less than "a philosophy, a belief system about the nature of learning and how it can be fostered in classrooms and schools" (Weaver, 1990, 3). The burgeoning popularity of this movement has been confined mainly to Early Years, although whole language methods can certainly be applied in Middle and Senior Years as well (e.g., see Gilles et al., 1988). An excellent guide to using the Whole Language Approach, specifically for Early Years EAL instruction, is Enright and McCloskey (1988).

The essence of the Whole Language Approach can be captured in the following four principles:

- Whole language instruction is holistic, featuring integration of all the language skills (listening, speaking, reading, writing, viewing, and representing) as well as integration of language and content-area work.
- Both oral and written language must be functional and authentic in the whole language classroom, fulfilling real purposes for language users and expressing personal meanings.
- Whole language instruction encourages considerable student control over the content of learning. To a large degree, the curriculum is "negotiated" with children; that is, "it evolves as teachers and children together explore topics and themes, generating new interests and goals" (Weaver, 1990, 25). Note, however, that whole language teachers are expected to ensure that the mandated curriculum is somehow incorporated into the "negotiated" one.
- Learning activities in a whole language environment involve a great deal of interaction (student-student, student-teacher), collaboration, and communication. Weaver (1990) asserts that whole language instruction is based on a transactional model of learning, "reflecting the fact that the learner actively engages with—or transacts with—the external environment, including people and books, in order to learn." (8)

These principles are recommended as important guidelines for content-based EAL approaches. The first is, of course, at the heart of the content-based approaches. As for the others, the proponents of whole language correctly assert that learning is enhanced when language is used for real purposes, when students have ownership over the curriculum, and when classroom activities are collaborative and transactional.

Despite these obvious merits, however, one must caution against the wholesale adoption of whole language as the sole basis of integrated EAL instruction. The Whole Language Approach often places too much reliance on "inner-directed" learning. Advocates of whole language generally assume, and often state explicitly (e.g., Goodman and Goodman, 1990), that successful learning depends mainly on the student's contribution to the process—interest, motivation, personal sense of purpose, autonomy, creativity, and so forth. This assumption is implicit in Weaver's interpretation of "transaction" in the last principle stated above. She views transaction as basically a one-way process, the student's active engagement with the external environment. There is no mention here of the environment's active engagement with the student. This betrays a general lack of interest towards the organization of maximally effective environmental support. A simpler name for the latter is "good teaching."

Good teaching means more than acting as a facilitator of students' learning and working to foster an atmosphere of independent inquiry, important though these responsibilities may be. Good teaching also involves the ability to assess what students know and are able to do on their own, to estimate what they could know and could do with proper pedagogical guidance, and to assist them to traverse the gap—this being Vygotsky's zone of proximal development. While much knowledge of and many skills in language and content-area work can doubtless be "acquired" through experiential learning of the whole language variety, there are many things that students cannot learn efficiently and successfully without the teacher's help.

Some may argue that the analysis presented here exaggerates certain facets of whole language teaching. Whole language teaching, its supporters will insist, does not exclude teacher-directed instruction; skilled whole language teachers are able to draw upon wide repertoire of different instructional styles (including teacher-directed ones) to meet the varied needs of their students. This is true, no doubt, but unfortunately not all teachers possess the necessary expertise to do this. There is cause for concern that the whole language environments of many students will turn out to be aimless and disorganized unless teachers are provided with clear guidelines for incorporating appropriate teacher-directed instruction into their lessons. The Foresee Approach contains specific guidelines of this sort, allowing teachers a systematic way of effectively blending together what Chamot and O'Malley (1989, 120) call "teacher-directed" and "learner-centred" instructional procedures.

Co-operative Learning

During the mid-1980s, increasing attention began to be paid to the instructional advantages of **co-operative learning** (e.g., Slavin, 1983; Johnson et al., 1984; Kagan, 1985, 1986). Although most research on the topic has dealt only with the English L1 context, Jacob and Mattson (1987) suggest that co-operative learning methods can also contribute to the academic development of EAL students. Obviously, such arrangements provide opportunities for a great deal of personal interaction among students. In regular classrooms, the increased communication between English-speaking and EAL students is likely to help the EAL students to improve their ability to communicate (McGroarty, 1992). Because a good deal of students' communication will involve the performance of content-area tasks, their academic language proficiency—especially their oral proficiency—is bound to improve. Jacob and Mattson (1987) maintain that next time co-operative learning methods can be used with all EAL students and with any type of class:

The methods are helpful with students from kindergarten through college at all levels of proficiency, in ESL pullout classes, sheltered English classes, or mainstream classes. Subjects can include English as a second language or content areas such as math, science, and social studies. (3)

Co-operative learning means more than putting students in small groups and having them work together. Various co-operative learning methods have been proposed in the literature on the topic. These differ from each other in a number of ways, including the aspects of development promoted, the type of co-operation required, student roles, and teacher roles. Perhaps the best known of these methods—at least among EAL teachers—is the **Jigsaw technique**, which Coelho (1988) has adapted for L2 instructional purposes. Still, some of the other specific methods reviewed by Jacob and Mattson (1987) also seem to have promise for the teaching of EAL students, although they may require modification.

Kagan (1990) observes that co-operative learning methods or structures, as he calls them, are “content-free ways of organizing social interaction in the classroom” (12). When used or applied for particular purposes in content area lessons, structures give rise to specific activities. Teachers can incorporate a variety of co-operative learning structures, such as those listed by Kagan (1990), to generate an unlimited number of classroom activities.

It is no exaggeration to say that co-operative learning of some kind should take place in every EAL lesson. Oral academic language skills are not developed in silent isolation. They stand a good chance of growing, however, when EAL students collaborate with each other or with English-speaking peers to accomplish meaningful content-related tasks.

Approaches and Methodologies That Have Influenced the Design of This Course

Constructivist Theory/Approaches

Constructivist theory emphasizes the importance of the learner's active construction of knowledge and the interplay between new knowledge and the learner's prior knowledge. Effective additional language instruction will provide opportunities for students to construct and create their own understanding of how to make meaning from what they hear and read, and how they use their understanding to construct and create their own meanings in speech and writing. Myriam Met describes a constructivist approach to the learning of additional languages in the text that follows:

In order to construct knowledge of a new language, students need exposure to the target language. This exposure makes the transmission of meaning in second languages accessible and understandable to students. Internalizing the relationship between meaning and the forms used to convey it is essential for production; students cannot spontaneously produce language they do not understand. In the first phase of internalization, students learn to understand what is heard by matching meaning with language. Learners need to notice features in the input (vocabulary, syntax, discourse markers) to which they can assign meanings. Through a carefully implemented sequence of instructional activities, students can be assisted to move through the construction of meaning. Students should be provided with comprehensible examples of new structures as used in authentic situations and extended spoken and written texts, as well as many opportunities to hear, understand, and match language with meaning.

Integrated EAL and Content-Based Approaches: CALLA and Foresee

In integrated EAL and content-based approaches, students practise all the language skills in a highly integrated, communicative fashion, while learning content such as science, mathematics, and social studies. In such approaches, English language learners are exposed to authentic language and are challenged to interact naturally in the language. Learners rapidly gain a true picture of the richness and complexity of the English language as employed for communication. Moreover, this approach stresses that English is not just an object of academic interest or merely a key to passing an examination; instead, English becomes a real means of interaction and sharing among people.

The **Cognitive Academic Language Learning Approach (CALLA)** is an instructional model that was developed to meet the academic needs of students learning English as a second language in North American schools. The model integrates academic language development, content area instruction, and explicit instruction in learning strategies for both content and language acquisition. CALLA is largely based on the foundations discussed earlier, but especially influenced by studies of cognition.

Chamot and O'Malley noted that students frequently lacked cognitive language proficiency (Cummins, 1980) because the academic language of schooling often lacks the visual and non-verbal clues associated with non-academic or social language. The desire to remedy this situation and prepare EAL students for content classrooms led to the creation of the cognitive academic language learning approach. Their approach is rooted in four areas of theory: constructivism (cognitive information processing, which focuses on the learner's mental processes and

different types of knowledge); schema theory (which emphasizes how the mind organizes information into schemata or mental structures); and social-cognitive theory (which explains how people interact to create learning).

The **cognitive information-processing** model considers the thinking processes that govern how we learn and remember, and how this immediate information becomes stored in long-term memory. The model suggests that learning new information requires mental processing through organizing the information, elaborating it, and linking it with existing knowledge. This is the reason for CALLA's emphasis on cognitive strategies such as summarizing, making inferences, and predicting what will come next in a reading text.

Information processing theorists discuss two types of knowledge in long-term memory: **declarative knowledge**, which is knowing something or knowing about something, such as facts, beliefs, and events; and **procedural knowledge**, which is learned through practice, has become automatized, and consists of knowing how to do something. These two types of knowledge are learned differently.

Cognitive information processing also includes metacognition ("thinking about thinking"), which has its own forms of declarative and procedural knowledge. In metacognition, declarative knowledge concerns knowing about one's own thinking processes and strategy usage, and procedural knowledge involves the actual, habitual use of learning behaviours that are by now automatic and therefore no longer conscious strategies. To support metacognitive thinking, it is important to explicitly introduce strategies (as declarative knowledge), telling students where and why they are useful, and then to give students plenty of opportunity to practise them until they become automatic (procedural knowledge). Schema theory, a set of concepts relevant to the declarative-knowledge aspect of cognitive information processing but deepened and expanded, proposes that true learning occurs as we try to organize and understand information according to what we already know, our pre-existing knowledge. We store prior knowledge as "concept maps" or schemata with a central idea and associated concepts. "Having a schema, or relevant prior knowledge, allows us to make predictions, visualize events, draw inferences, monitor comprehension, and create summaries" (Chamot et al., 1999: 158, emphasis in original). Success of the L2 learner in school has been closely linked with the student's ability to transfer L1 schemata to the second language.

Social-cognitive theory includes an emphasis on learners' motivation and sense of self-efficacy, a belief that one has the capacity to succeed at a given task. Because learning does not take place in a vacuum, the Cognitive Academic Language Learning Approach took into consideration the social nature of learning to explain not only why strategies work, but also how they can be taught. Learning strategies can build self-efficacy when used appropriately, and such strategies encourage willingness and persistence in task accomplishment. Still, it is not just the students' willingness and persistence that makes academic L2 learning possible. Vygotsky (1978) suggests that students develop effective learning behaviours by watching teachers and other experts as they perform learning tasks. Then, by practising these behaviours with support until they are able to do them alone, students can internalize them.

As indicated earlier, strategic instruction is a vitally important aspect of CALLA. Their interest in research on L2 learning strategies led to a desire to help students and teachers become more aware of strategies that could lead to greater success for L2 learners. Through numerous studies, Chamot and O'Malley determined that the differences between successful and unsuccessful language learners had less to do with the specific strategies that students understood and more to do with selecting and coordinating strategies that were appropriate to the task (Chamot and O'Malley 1994). Thus, learning strategies are "taught explicitly by naming the strategy, telling students what the strategy does to assist learning, and then providing ample instructional supports while students practise and apply the strategy" (Chamot and O'Malley 1994, 11).

Three types of strategies are the focus of CALLA instruction:

1. Metacognitive strategies, which involve executive processes in planning for learning, monitoring one's comprehension and production, and evaluating how well one has achieved a learning objective.
2. Cognitive strategies, in which the learner interacts with the material to be learned by manipulating it mentally (as in making mental images, or elaborating on previously acquired concepts or skills) or physically (as in grouping items to be learned in meaningful categories, or taking notes on important information to be remembered).
3. Social-affective strategies, in which the learner either interacts with another person in order to assist learning, as in co-operation or asking questions for clarification, or uses some kind of affective control to assist a learning task (Richard-Amato and Snow, 1992).

CALLA instruction takes the form of comprehensive lesson plans based on cognitive theory and efforts to integrate academic language and learning strategies with content; CALLA lessons rely on content to determine the academic language selections and learning strategies to be taught. These lessons rely heavily on scaffolding, or the provision of instructional supports when concepts and skills are first introduced, and the gradual removal of supports as students develop greater proficiency, knowledge, and skills.

The three components of CALLA—academic language development, content area instruction, and explicit instruction in learning strategies—are translated into a five-stage instructional sequence. Although these stages are not always followed in a strict order, they are always present as new content, language, and strategies are introduced. The stages can be viewed almost as a spiral, with the emphasis shifting depending on the needs of the students and forming an "interplay of instructional practices" (Chamot and O'Malley, 1996):

1. Preparation is used to help students become aware of their prior knowledge of the subject and the strategies they might already be using (metacognitive awareness). This alerts the teacher to the instructional needs in the classroom. Moreover, while this is similar in non-CALLA classrooms, here the teacher takes special care in the way this knowledge is elicited, builds in language opportunities, and provides support for the content of the answer rather than the form.

2. Presentation focuses on conveying new information using meaningful content with lots of visuals and demonstrations. Teacher modelling is extremely important in this stage.
3. During the practice stage, students use the new information in many ways, with oral and written academic language and applying strategies in classroom activities, often working collaboratively with classmates.
4. Evaluation allows the students to develop metacognitive awareness of their accomplishments and learning processes as they assess their worth.
5. Expansion allows the students to take what they have learned and apply it to their culture and the outside world, a significant undertaking (Chamot and O'Malley, 1996).

The **Foresee Approach** is a modified version, or more accurately an extension, of CALLA. Foresee and CALLA share the same purpose and resemble each other in many important respects. The differences between the two models exist on two levels: the theoretical level and the classroom application level. (The innovations on the application level are discussed at length in chapters 2 and 3 of *Secondary Sourcebook for Integrating ESL and Content Instruction Using the Foresee Approach*, 1994.) The Foresee theoretical model is based directly on CALLA, although it incorporates some significant enhancements and differences.

Foresee, like CALLA, is a model of integrated instruction. Most other models of this type emphasize the integration of two main domains of knowledge: content and language. CALLA goes beyond them in advocating the integration of three domains: content, language, and learning strategies. Foresee copies this scheme, and thus a typical CALLA lesson contains instruction relating to three components, as illustrated in Figure 1.3.

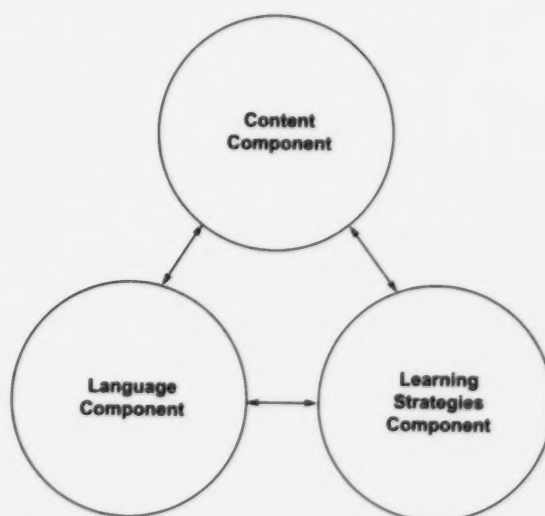


Figure 1.3: Three Components of the CALLA and Foresee Theoretical Model

These three components are not taught separately, in isolation from each other. Rather, they interact with each other in reciprocal and mutually supportive ways, as indicated by the two-way arrows in Figure 1.3. The two components at the bottom, language and learning strategies, serve as the “base” for the learning of content (subject matter). Conversely, the content material provides the vehicle through which academic language proficiency can be developed and the learning strategies can be learned and practised. In fact, it is fair to say that Foresee instruction is “content-driven,” since the choice of content generally determines which aspects of language and which learning strategies will be taught; hence, the position of content at the top of the triangle is appropriate. As for the interaction between the two base components, well-chosen learning strategies can assist students to acquire language (knowledge and skills), while language skills are essential to the successful application of the learning strategies. As an example of the latter dependence, good listening skills are obviously important to effective note taking, one of the cognitive strategies listed by Chamot and O’Malley.

Academic Word List

The work of Nations (2001) and others stresses the importance of vocabulary acquisition in attaining the level of English needed for Senior Years high school and post-secondary studies. Nations reports that up until the first 20,000 word families, first language English speakers add roughly 1,000 words a year, so that the average university graduate will have a vocabulary of about 20,000 words. The challenge for EAL learners is that while they may add about the same number of words or more annually, they are always working from an initial gap that may never be closed. An older EAL student may study English for several years, but still only possess a vocabulary of less than 5,000 word families. Nations also states that a reader must know 95 percent of the words in a text to read independently for meaning. The task seems almost insurmountable for secondary EAL learners.

However, by concentrating study on the words that are used most frequently, students can efficiently gain key vocabulary that will transfer to a number of different academic language situations. The computer analysis of extensive collections of language samples (corpora) reveals that about 2,000 word families from the General Service List (West, 1953) account for 75 percent to 80 percent of the vocabulary of most academic texts and newspapers, giving a density of unknown words of about one in five. These words should be a student’s first goal.

Students also need to become familiar with the Academic Word List (AWL), composed of 570 word families that occur frequently across a broad range of academic disciplines (Coxhead, 2000); words like *theory*, *compile*, *demonstrate*, *minimum*. This Academic Word List accounts for another 10 percent of the vocabulary, and provides a density of unknown words of 1 in 10 (Nation, 2001)—a much better situation than the 1 in 5. Learning the first 2,000 words and the 570 words from the AWL would allow a student to know about 90 percent of the words encountered in an academic text. The remaining words are specialized subject-specific words and proper names, et cetera, that all students must learn.

Several tools are available to work with the AWL, and a number of texts provided with the course materials have been analyzed by word frequency. Since academic

words are often best taught through repeated exposure in context, the texts have been chosen because they provide good opportunities to meet or recycle these words. Teachers are encouraged to use online vocabulary profilers to analyze additional texts and to develop learning activities that work with the vocabulary from the AWL.

Lexical Approach

The work of applied linguists such as Nattinger and Decarrio (1992) and Michael Lewis (1993, 1997) challenged the traditional division of grammar and vocabulary by arguing that language is largely composed of grammatically rich "chunks" of two to seven words. Individual words often carry combinatory possibilities with them, so that the word *opportunity* is often preceded by *miss*, *grab*, *take*, or *make the most of*; these particular combinations are referred to as collocations. Lewis believes that learning these multi-word phrases or "chunks" can give student a naturalness and fluency that is difficult to achieve by separating vocabulary items and grammar rules.

His lexical approach is dependent on the computer analysis of corpora. Using concordancing tools, a chosen text can be analyzed for common collocations. The teacher's role then is to select texts where students will encounter many of these typical lexical patterns, to make students aware of the existence of chunks, and to provide opportunities for students to process the new vocabulary in context. Thus, many of the resources included with the course materials were selected to provide typical linguistic environments for high-frequency academic lexis, and activities are suggested that encourage students to review and consolidate new vocabulary.

Task-Based Learning of an Additional Language

The course also reflects the principles of task-based learning as described by David Nunan. Learners preparing to enter post-secondary education need to participate in authentic communicative tasks, both receptive and productive, that are typical of the "real world" classroom. Nunan (2001) defines a task as "a communicative act that does not usually have a restrictive focus on a single grammatical structure. It also has a non-linguistic outcome." Nunan distinguishes between real-world or target tasks that are achieved "through language in the world outside the classroom" and pedagogical tasks that involve learners in manipulating and working in the language while their attention is principally focused on meaning rather than form. To develop the skills that enable the learner to take part in these tasks, the teacher may provide language exercises, which focus on one or two language items, and activities that add a communicative outcome to the linguistic focus. In designing the course syllabus and materials, much consideration was given to providing appropriate tasks and activities, while it is assumed that the teacher will normally draw on existing grammar resources for language-focused exercises.

Knowledge Structures

The gap between language learning and content learning can be bridged by an understanding of the role of knowledge structures in creating meaning (Mohan, 1990). Knowledge structures can be either viewed as graphic organizers for subject area knowledge, or patterns of meaning and language that are inherent in the discourse of a subject area. While more of a strategy than an approach, knowledge structures have been used to make the link between language and content apparent in a number of lessons.

Essential Questions

The premise that essential questions are an important facet of learning is another one of the theoretical underpinnings of this course. Many theorists and educators such as Grossier (1964), Carin and Sund (1971), Francis Hunkins (1972), Keen and Zimmerman (1997), and Wiggins and McTighe, ASCD (1998) have promoted the importance of using effective questioning strategies in teaching and learning across the subject areas. Also known as problem-based or inquiry-based learning, essential questions learning supports the current shift in education from the exclusive learning of content to the inclusion of the processes involved in learning. Asking essential questions takes students beyond the mere gathering of facts and challenges them to solve problems and make decisions at each stage of a learning task. The question itself is a learning tool. The process of learning, then, is guided by a set of essential questions based on Bloom's Taxonomy. Memorization is not enough; students must ask the essential questions as they think, analyze, and interact actively with authentic, stimulating, and complex material in order to solve problems. The lessons in the course promote both teachers and students asking effective questions. Questioning is an outgrowth of the activation of prior knowledge at the beginning of each lesson. As students work through higher-order questions especially, the use of graphic organizers allows them to visually express their thought processes, the connections and relationships they see, and different aspects of an issue. The development of questioning skills is crucial to prepare students for solving the complex and challenging problems they will face in post-secondary courses and in the real world.

ASSESSMENT:
THE KEY TO ENHANCING LEARNING AND TEACHING



ASSESSMENT: THE KEY TO ENHANCING LEARNING AND TEACHING

Assessment is a systematic process of gathering information about what a student knows, is able to do, and is learning to do. Assessment information provides the foundation for decision making and planning for instruction and learning. Assessment is an integral part of instruction that enhances, empowers, and celebrates student learning.

Assessment is an integral component of the teaching-learning process that should facilitate student learning and improve instruction. Using a variety of assessment techniques, teachers gather information about what students know and are able to do, and provide positive, supportive feedback to students. They also use this information to diagnose individual needs and to improve their instructional programs, which in turn helps students learn more effectively. Evaluation is also used for reporting progress to parents or guardians, and for making decisions related to such things as student promotion and awards.

Assessment must be considered during the planning stage of instruction when learning objectives and teaching methods are being chosen. It is a continuous activity, not something to be dealt with only at the end of a unit of study. Students should be made aware of the objectives of the program and the procedures to be used in assessing performance relative to the objectives. Students can gradually become more actively involved in the assessment process in order to develop lifelong learning skills.

Evaluation refers to the decision making that is based on assessment. Evaluation is a judgement regarding the quality, value, or worth of a response, product, or performance, based on established criteria and curriculum standards. Evaluation should reflect the intended learning outcomes of the curriculum and be consistent with the approach used to teach the language in the classroom. It should also be sensitive to differences in culture, gender, and socio-economic background. Students should be given opportunities to demonstrate the full extent of their knowledge, skills, and abilities.

Diagnostic assessment may occur at the beginning of a term or a unit of study, or whenever information about the prior learning of a student is useful. Various types of diagnostic assessments (tests, writing samples from journals, writing samples from performance-based assessment, commercially available diagnostic tools, et cetera) may be used to collect that information. Teachers may use diagnostic assessment to

- find out what students know and can do
- identify student strengths and plan instruction that builds on and extends those strengths
- target and identify the precise nature of difficulties, and plan instruction to meet those difficulties
- make informed decisions regarding where to focus instructional time and effort

Formative assessment, also described as assessment *for* learning and/or assessment *as* learning, is similar to diagnostic assessment but differs in that it provides ongoing feedback to the teacher about the effectiveness of instruction. It is most effective when it involves both the student and teacher, and takes place throughout the learning process. Formative assessment encompasses a variety of strategies, used selectively to accomplish one or more of the following purposes:

- monitor student learning and provide feedback to students and parents
- identify areas of growth
- motivate students and provide incentive to study
- help focus attention and effort
- emphasize what is important to learn
- provide practice in applying, demonstrating, and extending knowledge, skills, and attitudes
- encourage setting goals and monitor achievement of goals
- reflect on program structure and effectiveness, and modify or adjust teaching as necessary

Summative assessment, also described as assessment *of* learning, occurs most often at the end of a unit of study. The primary purposes are to determine the knowledge, skills, and attitudes that have developed over a period of time, and to summarize student progress.

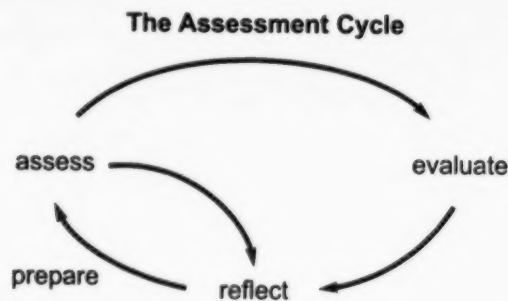
Each type of assessment serves a purpose and contributes to student success, but research continues to demonstrate that ongoing formative assessment contributes more significantly to learning than the more traditional focus on summative assessment. Classroom-based assessment *for* learning allows students and teachers to determine what students have learned, and what they need to learn next. Students need frequent opportunities for meaningful and relevant feedback. Descriptive or narrative feedback—that which includes analytical questions and constructive comments—provides information to students that they may use to adjust their learning processes, and is more helpful to them than a numerical or alphabetical grade. Assessment that is ongoing and meaningful provides opportunities for students to become reflective learners—to synthesize their learning, to solve problems, to apply their learning in authentic situations, and to better understand their learning processes—as well as opportunities for teachers to become reflective practitioners. Assessment *of* learning that takes place at the end of a module, or at the end of a term or year, provides important information about student progress and achievement, as well as instructional effectiveness. This information is usually shared with parents via report cards.

It is important that the purpose of assessment (*of* or *for* learning), as well as how assessment information will be used, is clear to both teachers and students. With a clearly understood purpose, students are encouraged to take more responsibility for their learning, and are better able to focus their efforts, while teachers can better select the instruction and assessment strategies and student learning resources that will improve student achievement.

A Cyclical Process

The assessment process is cyclical in nature. Each phase is linked to and dependent on the others.

- In the **preparation** phase, decisions are made about what is to be assessed and/or evaluated, which student learning outcomes will be the focus of assessment, and the most appropriate assessment techniques for gathering information. If the assessment is to be used for student evaluation, criteria for judging student performance must be developed.
- The **assessment** phase involves developing, selecting, and using assessment tools, deciding when and how assessments will be conducted, and then collecting, organizing, and interpreting the information on student learning.
- If using the assessment information for student evaluation, the teacher makes a judgment on the progress of the student and the level of achievement reached relative to the learning outcomes and the criteria established earlier.
- In the **reflection** phase, teachers consider the information gathered about student learning and the assessment process, and then identify the implications for subsequent teaching, learning, and assessment.



Meaningful Assessment

Assessment should occur in authentic contexts that allow students to demonstrate learning by performing meaningful tasks. Meaningful assessment achieves a purpose and provides clear and useful information. For example, it may identify misunderstandings in student learning and provide corrective feedback and direction for further instruction. Assessment improves instruction and learning.

Meaningful content and contexts for assessment help students by engaging their attention and encouraging them to share their work and talk about their learning processes. Students need to take an active part in assessment. When students understand assessment criteria and procedures and take ownership for assessing the quality, quantity, and processes of their own work, they develop self-assessment skills. The ultimate goal of assessment is to develop independent lifelong learners who regularly monitor and assess their own progress.

The Teacher's Role in Assessment

In the classroom, teachers are responsible for the assessment of students and for guiding the assessment process. Teachers design assessment tools with two broad purposes: to collect information that will inform classroom instruction, and to monitor students' progress toward achieving year-end learning outcomes. Teachers

also assist students in developing self-monitoring and self-assessment skills and strategies. To do this effectively, teachers must ensure that students are involved in setting learning goals, developing action plans, and using assessment processes to monitor their achievement of goals. Teachers also create opportunities for students to celebrate their progress and successes.

Teachers learn about students' learning and progress by regularly and systematically observing students in action, and by interacting with them during instruction. Because students' knowledge and many of their skills, strategies, and attitudes are internal processes, teachers gather data and make judgements based on observing and assessing students' interactions, performances, and products or work samples.

Teachers demonstrate that assessment is an essential part of learning. They model effective assessment strategies and include students in the development of assessment procedures such as creating rubrics or checklists. Teachers also collaborate with parents and colleagues regarding student assessment.

Assessment and Evaluation Purposes and Audiences

The quality of assessment largely determines the quality of evaluation. Valid judgements can be made only if accurate and complete assessment data are collected in a variety of contexts over time. Managing assessment that serves a multitude of purposes and audiences is a challenging task. Teachers must continually balance not only the assessment of students' progress in the development of knowledge, skills and strategies, and attitudes, but also their own purposes and audiences for information collected during assessment.

Guiding Principles for the Assessment of Additional-Language Learning

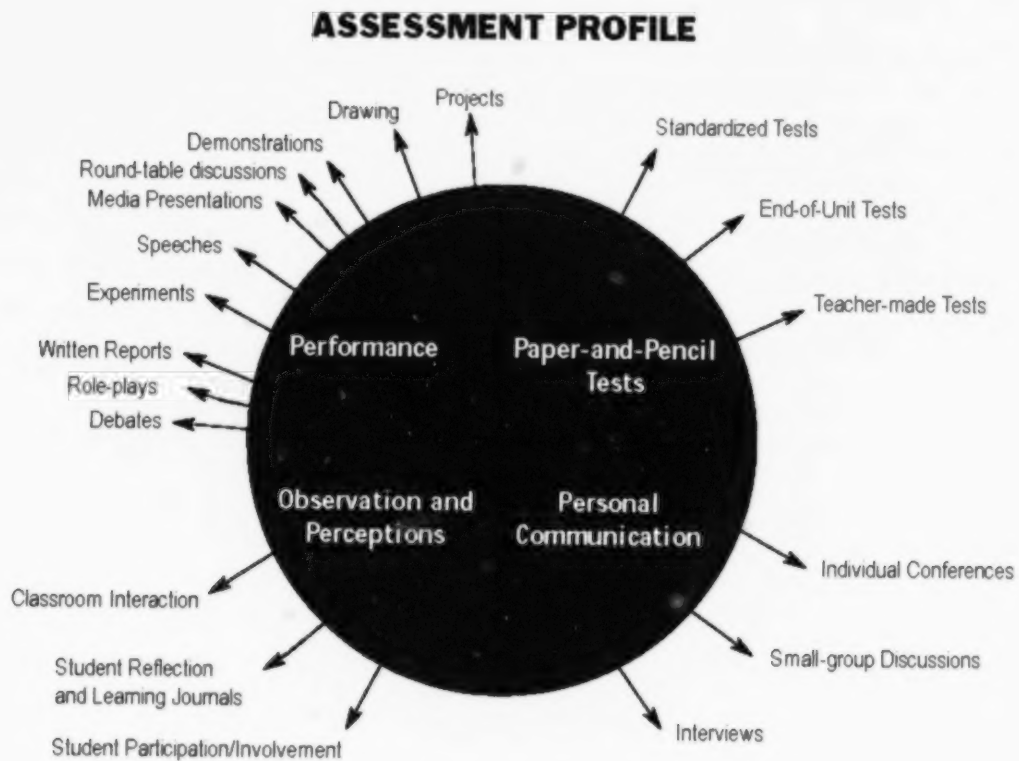
Classroom-based assessment provides regular feedback and allows teachers and students to reflect on progress and adjust instruction and learning accordingly. See the chart "Principles of Assessment that Assist Learning and Inform Instruction" on the following page. When planning for assessment for second language learning, it is important to consider the following points:

- The teacher should use a variety of assessment techniques that clearly reflect the communicative, learner-centred, task-based approach to learning an additional language. For example, when using a task-based approach, written interpretation would be tested by having students use the information in a written text to carry out a task, rather than by having students answer comprehension questions.
- The percentage of the mark allotted to each component of the curriculum should reflect the amount of time that the students spend on that component in the classroom. For example, if students are spending 70 percent of their time on oral activities, 70 percent of their final mark should be determined by oral evaluation.
- Assessment criteria should be clear and consistent with the outcomes desired. For example, if students are being tested for aural interpretation and the test requires that they write down information they have understood, they should be marked on whether or not they have understood, not on whether the information written was correctly spelled.
- Evaluation should take place in the context of meaningful activities. For example, grammar points dealt with in the course of a unit can be evaluated by looking at whether or not they are correctly used in the task the students are doing, not in fill-in-the-blank or other decontextualized exercises.
- Different kinds of learning outcomes should be evaluated in different ways. For example, knowledge-related outcomes can be assessed by objective tests; attitudes are better assessed by observation.
- Students should be involved in determining the criteria, or be given the criteria (e.g., a marking rubric) that will be used for evaluating their work. This can be part of the planning process at the beginning of each unit.
- Students should have a clear understanding of the evaluation procedures that will be used throughout the unit.

Principles of Assessment that Assist Learning and Inform Instruction		
1. An Integral Part of Instruction and Learning	2. Continuous and Ongoing	3. Authentic and Meaningful Language Learning Processes and Contexts
<i>Assessment . . .</i> • is meaningful to students • leads to goal setting • fosters integration with other curricular areas and application to daily life • reflects instructional strategies used • uses a wide variety of methods • reflects a definite purpose	<i>Assessment . . .</i> • occurs through all instructional activities (observations, conferences, responses, logs) • occurs systematically over a period of time • demonstrates progress toward achievement of learning outcomes	<i>Assessment . . .</i> • focuses on connecting prior and new knowledge (integration of information) • focuses on authentic context and tasks • focuses on application of strategies for constructing meaning in new contexts
4. Collaborative and Reflective Process	5. Multi-dimensional, Incorporating a Variety of Tasks	6. Developmentally and Culturally Appropriate
<i>Assessment . . .</i> • encourages meaningful student involvement and reflection • involves parents as partners • reaches out to the community • focuses on collaborative review of products and processes to draw conclusions • involves a team approach	<i>Assessment . . .</i> • uses a variety of authentic tasks, strategies, and tools • is completed for a variety of purposes and audiences • reflects instructional tasks	<i>Assessment . . .</i> • is suited to students' developmental levels • is sensitive to diverse social, cultural, and linguistic backgrounds • is unbiased
7. Focused on Students' Strengths	8. Based on How Students Learn	9. Offers Clear Performance Targets
<i>Assessment . . .</i> • identifies what students can do and are learning to do • identifies competencies in the development of knowledge, skills, and attitudes • considers preferred learning styles • focuses on celebrations of progress and success • provides for differentiation • provides information to compare a student's performance with his/her other performances	<i>Assessment . . .</i> • uses sound educational practice based on current learning theory and brain research • fosters development of metacognition • considers multiple intelligences and learning styles • uses collaborative and co-operative strategies • considers research on the role of memory in learning • reflects current models of language learning	<i>Assessment . . .</i> • encourages student involvement (setting criteria, measuring progress, working towards outcomes and standards) • encourages application beyond the classroom • provides a basis for goal setting • provides students with a sense of achievement • provides information that compares a student's performance to predetermined criteria or standards

Assessment Tools and Strategies

Choosing assessment strategies and tools requires that teachers consider the range of classroom situations that students will experience. A variety of tools and resources may be used.



IDEAS FOR EXHIBITIONS AND PROJECTS

The following list provides teachers with ideas for products, performances, and processes that can be incorporated as authentic tasks into projects and exhibitions. Teachers using this list will provide students with meaningful, relevant classroom experiences that can be applied in real-world contexts and actively involve students in the learning process.

Language teachers are encouraged to use this selected list to create their own list of projects to fit course outcomes and the varied interests and talents of students.

The categories are only one way to arrange the list. Many products and performances can cross over into other categories. In the language classroom, culture is interwoven throughout the products, processes, and performances, as are the communicative skills.

Media/Technology

advertisements	editorials	news reports	slides
cable channels	filmstrips	newsletters	slide shows
CD-ROM creations	infomercials	newspapers	TV shows
clip art	magazines	opinion polls	<i>TV Guide</i>
commercials	marketing campaigns	radio shows	travelogues
computer graphics	movies	screenplays	videos
computer programs	multimedia presentations	scripts	websites

Visual and Performing Arts

banners	comic strips	logos	role-plays
billboards	displays	photo essays	simulations
bulletin boards	drawings	plays	skits
cartoons	illustrations	posters	socio-dramas
collages	labels	raps, jingles, chants	songwriting

Speaking/Listening

audio/videotapes	debates	oral reports	seminars
court-trial simulations	discussions	panel discussions	speeches
co-operative tasks	narratives	presentations	storyboards
		scenarios	

Adapted from the *Nebraska K-12 Foreign Language Frameworks*, 1996, as cited in the *New Jersey World Curriculum Framework*, 1999.

IDEAS FOR EXHIBITIONS AND PROJECTS

Reading/Writing/Literature

3-D research papers	historical documents	outlines	satires
bibliographies	histories	persuasive writing	stories
biographies	journal articles	poetry	term papers
books	lists of books read	poetry anthologies	time capsules
dictionaries of terms	lists of movies seen	portfolios	timelines
encyclopaedias	lyrics	position papers	written questions
essays	memoirs	reaction papers	writing systems
expository writing	myths	reports	
fables	narrative writing	research reports	

Hands-on/Kinesthetic

collections	field trips	learning centres	scale models
constructions	floor plans	models	scavenger hunts
demonstrations	games	museum displays	sports/outdoor activities
dioramas	inventions	physical exercise	
environmental studies	labs	project cube	

Daily Life

brochures	email	manuals	petitions
contracts	instructions	maps	questionnaires
daily routines	journals	menus	resumés
diaries	labels	messages—voice/written	schedules
directions	letters of all kinds	pamphlets	spreadsheets
			surveys

Thinking Skills

analogies	decision making	goal setting	puzzles
categorizing/classifying	design experiments	graphic organizers	rating scales
cause/effect	diagrams	graphs	reflection
charts	elaboration	graphs, 3-D	self-discovery
compare/contrast	evaluation	homework	synthesis
comparison charts	evaluation of evidence	lesson and test design	synthesis of research
concepts	experiments	patterns	Venn diagrams
cross-number puzzles	extrapolation	plans	visualization
crossword puzzles	fact files	problem solving	webbing/Mind Maps

Adapted from the *Nebraska K-12 Foreign Language Frameworks*, 1996, as cited in the *New Jersey World Curriculum Framework*, 1999.

Examples of Student Assessment Techniques

There are a number of ways of organizing student assessment and a variety of tools that can be used to carry it out. The choice of techniques will depend largely on what is being evaluated. Students can be assessed by observing them as they are engaged in classroom activities, by measuring how well their work meets specific criteria, or by giving them different kinds of tests. They can be assessed individually or in groups. The assessment can be done by the teacher, by the student himself or herself, or by other students. A number of different tools can be used to record the results of the assessment; for example, checklists, rating scales, or anecdotal records.

The following are some examples of techniques specifically designed to assess different aspects of second language learning. **Each technique can be used to assess other aspects of learning than the example given.** For example, observation checklists can be used to assess group activities, reflection on learning strategies, the spelling, grammar, and punctuation of written texts, and so on.

Anecdotal Records

Anecdotal records are systematically kept notes of specific observations of student behaviours, skills, and attitudes in the classroom. Anecdotal records provide cumulative information regarding progress, skills acquired, and directions for further instruction. Anecdotal notes are often written as the result of ongoing observations during the lessons, but may also be written in response to a product or performance the student has completed. Systematic collection of anecdotal records on a particular student provides excellent information for evaluation of learning patterns and consistency of student progress. Well-kept anecdotal records provide a valuable, practical, and specific reference about a student.

Checklists, Rating Scales, and Rubrics

Checklists, rating scales, and rubrics are assessment tools that state specific criteria that allow teachers and students to evaluate learning. They list specific behaviours, knowledge, skills, attitudes, and strategies for assessment, and offer systematic ways of organizing information about individual students or groups of students.

Checklists usually offer a yes/no format in relation to the specific criteria and may be directed toward observation of an individual, a group, or a whole class. Checklists may be single-use or multiple-use.

Rating scales allow for an indication of the degree or frequency of the behaviours, skills and strategies, or attitudes displayed by the learner. They may be used to gather individual or group information, and are usually single-use. Multiple-use rating scales may be achieved by having students or the teacher complete the same rating scale at different times during the school year and make comparisons.

Rubrics are an expanded form of rating scale that list several specific criteria at each level of the scale. They may be used to assess individuals or groups and, as with rating scales, may be compared over time.

The quality of information acquired through the use of checklists, rating scales, and rubrics is highly dependent on the quality of the descriptors chosen for assessment. Their benefit is also dependent on students' direct involvement in the assessment and interpretation of the feedback provided.

Sample Assessment Rubrics

Generic Rubric for Collaborative Work				
	4	3	2	1
Workload quality	workload shared equally	workload somewhat unequal	workload unequal—done mostly by one or two students	workload unequal—one student has done all the work
On task	all the time	most of the time	sometimes	little involvement; rarely on task
Interaction	much discussion; shows respect for others	some discussion; respectful of others	little discussion; easily distracted; somewhat disrespectful of others	shows little interest; disrespectful of others

Generic Rubric for Oral Presentations		
	Yes	No
Accurate pronunciation		
Accurate grammar		
Appropriate voice, pacing, and linkage, reductions, and inflections		

Generic Rubric for Oral Presentations—Cultural Role-Play				
	4	3	2	1
Pronunciation	accurate throughout	understandable, with very few errors	some errors, but still understandable	poor pronunciation
Fluency	smooth delivery	fairly smooth	unnatural pauses	halting; hesitant; long gaps
Comprehensibility	easily understood	understood	difficult to understand	incomprehensible
Vocabulary	extensive use of targeted vocabulary	some use of targeted vocabulary	minimal use of targeted vocabulary	fails to use targeted vocabulary
Credibility (shows knowledge of culture)	credible role play; reflects the culture	credible role play; somewhat reflects the culture	limited credibility; little connection to target culture	not credible; no connection to target culture visible
Performance	lively, enthusiastic; good contact with the audience	general enthusiasm; some contact with the audience	little enthusiasm; limited contact with the audience	reads from cards; monotonous; no contact with the audience

Adapted from the *Nebraska K-12 Foreign Language Frameworks*, 1996, as cited in the *New Jersey World Curriculum Framework*, 1999.

EAL Composition Profile

Score	Range	CONTENT Criteria	Comments
	4	EXCELLENT TO VERY GOOD: knowledgeable • substantive • thorough development of thesis • relevant to assigned topic	
	3	GOOD TO AVERAGE: some knowledge of subject • adequate range • limited development of thesis • mostly relevant to topic, but lacks detail	
	2	FAIR TO POOR: limited knowledge of subject • little substance • inadequate development of topic	
	1	VERY POOR: does not show knowledge of subject • non-substantive • not pertinent • OR not enough to evaluate	

Score	Range	ORGANIZATION Criteria	Comments
	4	EXCELLENT TO VERY GOOD: fluent expression • ideas clearly stated/ supported • succinct • well organized • logical sequencing • cohesive	
	3	GOOD TO AVERAGE: somewhat choppy • loosely organized but main ideas stand out • limited support • logical but incomplete sequencing	
	2	FAIR TO POOR: non-fluent • ideas confused or disconnected • lacks logical sequencing and development	
	1	VERY POOR: does not communicate • no organization • OR not enough to evaluate	

Score	Range	VOCABULARY Criteria	Comments
	4	EXCELLENT TO VERY GOOD: sophisticated range • effective word/idiom choice and usage • word form mastery • appropriate register	
	3	GOOD TO AVERAGE: adequate range • occasional errors of word/idiom form, choice, usage but meaning not obscured	
	2	FAIR TO POOR: limited range • frequent errors of word/idiom form, choice, usage • meaning confused or obscured	
	1	VERY POOR: essentially translation • little knowledge of English vocabulary, idioms, word form • OR not enough to evaluate	

(continued)

EAL Composition Profile (continued)

Score	Range	LANGUAGE USE Criteria	Comments
	4	EXCELLENT TO VERY GOOD: effective complex constructions • few errors of agreement, tense, number, word order/function, articles, pronouns, prepositions	
	3	GOOD TO AVERAGE: effective but simple constructions • minor problems in complex constructions • several errors of agreement, tense, number, word order/function, articles, pronouns, prepositions but meaning seldom obscured	
	2	FAIR TO POOR: major problems in simple/complex constructions • frequent errors of negation, agreement, tense, number, word order/function, articles, pronouns, prepositions and/or fragments, run-ons, deletions • meaning confused or obscured	
	1	VERY POOR: virtually no mastery of sentence construction rules • dominated by errors • does not communicate • OR not enough to evaluate	

Score	Range	MECHANICS Criteria	Comments
	4	EXCELLENT TO VERY GOOD: demonstrates mastery of conventions • few errors of spelling, punctuation, capitalization, paragraphing	
	3	GOOD TO AVERAGE: occasional errors of spelling, punctuation, capitalization, paragraphing but meaning not obscured	
	2	FAIR TO POOR: frequent errors of spelling, punctuation, capitalization, paragraphing • poor handwriting • meaning confused or obscured	
	1	VERY POOR: no mastery of conventions • dominated by errors of spelling, punctuation, capitalization, paragraphing • handwriting illegible • OR not enough to evaluate	

Score	Range	VOICE Criteria	Comments
	4	EXCELLENT TO VERY GOOD: topic springs to life • author's excitement about topic clearly evident • strong personal appeal to the reader	
	3	GOOD TO AVERAGE: writer is engaged with topic • writer engages the reader	
	2	FAIR TO POOR: limited involvement with the topic • writes to fulfill the assignment • only slightly engaging to the reader	
	1	VERY POOR: no hint of author's involvement with the topic • writer could be anyone	

Total Score	Reader	Comments

Adapted from the *Nebraska K-12 Foreign Language Frameworks*, 1996, as cited in the *New Jersey World Curriculum Framework*, 1999.

Generic Rubric for Written Materials—Creative Writing			
	Outstanding 3	Satisfactory 2	Poor 1
Spelling/Pronunciation	spelling and punctuation almost always correct	some errors throughout	careless; numerous errors
Grammar	at current level of study or above with very few errors	some errors—subjects and verbs don't always match, wrong tenses are sometimes used; does not always represent current level of study	writing is at 1st- or 2nd-year level; many grammatical errors frequent mismatched subjects and verbs; writing is mostly in present tense
Creativity	creative, original descriptions; realistic characters; well illustrated; neat	some creativity; simple descriptions; mostly neat	shows no creativity or planning; incomplete descriptions; unrealistic characters; haphazard illustrations or no illustrations
Opening and Closing	more than required	meets requirement	some items missing; work appears hastily assembled

Adapted from the *Nebraska K-12 Foreign Language Frameworks*, 1996, as cited in the *New Jersey World Curriculum Framework*, 1999.

Assessing the Quality of Portfolios

This rubric suggests standards and criteria that teachers can use to assess portfolios. The standards and criteria should be shared with students before they begin building their portfolios.

	Superior	Excellent	Good	In Progress
Appearance	extremely appealing, professional looking	attractive, neat	somewhat attractive or neat	sloppy, effort not shown
Creativity	creativity abounds, much original thinking, and/or elaboration	much creativity, original thinking, and/or elaboration	some evidence of creativity, original thinking, or elaboration	little or no evidence of creativity, original thinking, or elaboration
Content	all quality artifacts chosen demonstrate a high level of reasoning	quality artifacts chosen demonstrate clear reasoning	some artifacts chosen demonstrate clear reasoning	few or none of the artifacts chosen demonstrate clear reasoning
Organization	striking organization that makes the reading flow smoothly	organized, definite transition between works and parts of the portfolio	fairly organized, good transition in topics	nothing in order, appears thrown together, no transition
Completeness	contains required pieces, shows much extra effort with additional pieces	contains required piece, some additional pieces	contains required pieces	missing some required pieces
Reflection	high level of analytical thinking backed by sound evidence	obvious time on reflection, honest; excellent details	adequate reflection shown	very brief, done hurriedly, not sincere or honest

Adapted from the *Nebraska K-12 Foreign Language Frameworks*, 1996, as cited in the *New Jersey World Curriculum Framework*, 1999.

Oral Activity Self-Evaluation

Rate yourself on your performance on a scale of 1 to 3 in each of the categories below.

- ★★★ above-average performance/task completion
 ★★ satisfactory performance, met basic requirements
 ★ needs improvement, did not succeed in this part of the task

	★	★	★
Content			
• The content was complete.	☐	☐	☐
• The ideas were well organized.	☐	☐	☐
Comprehensibility			
• I was comprehensible to my partner.	☐	☐	☐
• I was comprehensible to the teacher.	☐	☐	☐
Vocabulary and expressions			
• I used recently learned expressions.	☐	☐	☐
• I used recently learned new vocabulary.	☐	☐	☐
Grammar			
• I used challenging constructions.	☐	☐	☐
Fluency			
• I spoke in reasonable quantity.	☐	☐	☐
• I spoke with few hesitations.	☐	☐	☐
Register			
• I used formal or familiar forms of expression, as appropriate.	☐	☐	☐

Adapted from the *Nebraska K-12 Foreign Language Frameworks*, 1996, as cited in the *New Jersey World Curriculum Framework*, 1999.

Oral Report Assessment

Speaker: _____

Reviewer: _____

Date: _____ Class: _____

Assignment Title: _____

I understood what the report was about. _____ Yes _____ Somewhat _____ No

I liked the way the speaker _____

To improve, the speaker might _____

Rate the oral report form from 5 (fantastic) to 1 (needs improvement)

Outlines presented	5	4	3	2	1
Key words listed	5	4	3	2	1
Clear organization	5	4	3	2	1
Use of visuals/illustrations	5	4	3	2	1
Minimal reference to written notes	5	4	3	2	1
Appropriate length	5	4	3	2	1
Questions answered	5	4	3	2	1
Speaker appears interested in topic	5	4	3	2	1
Originality, creativity	5	4	3	2	1
Speaker supports an opinion	5	4	3	2	1

Adapted from the *Nebraska K-12 Foreign Language Frameworks*, 1996, as cited in the *New Jersey World Curriculum Framework*, 1999.

Expressing a Point of View

Name: _____ Date: _____ Topic: _____

Rate yourself along the continuum:

very
successful

not very
successful

I think I was successful in expressing my opinion.

☐☐

My opinion had several supporting arguments.

☐☐

My supporting arguments were well organized.

☐☐

I was persuasive and convincing.

☐☐

I used discourse markers and conversation gambits effectively.

☐☐

My sentence structure was grammatically accurate.

☐☐

The best part of my presentation was _____

I could improve my presentation if I _____

Adapted from the *Nebraska K-12 Foreign Language Frameworks*, 1996, as cited in the *New Jersey World Curriculum Framework*, 1999.

Conferences

Conferences provide opportunities for students and the teacher to discuss learning strengths and areas for improvement, and to set learning goals. In conferences, it is possible to learn a great deal about students' understanding of information, attitudes toward learning, and the skills and strategies they employ during the learning process. Conferences provide opportunities for individualized teaching, for guiding students to more challenging materials, and for determining future instructional needs.

Conferences are usually short informal meetings held with individual students, or a small group of students, and involve diagnostic listening, questioning, and responding. Interviews, on the other hand, are conferences that are conducted to gather specific information. They may involve a set of questions you ask for a specific purpose. For example, you may need information about the student's reading patterns and difficulties and use a formal conference or interview to ask questions directly related to a particular aspect of the student's performance.

Sometimes more formal interviews are conducted regarding student attitudes and metacognitive behaviours. These are often presented as a set of questions or activities to which the student may respond orally, with the teacher recording responses.

Whether conferences are informal or formal, they are most beneficial for assessment purposes when they are held on a regular schedule and both student and teacher come prepared with materials to share and questions to ask. Systematic conference notes form a permanent record of the content of the conference and set goals for future learning. Conferences provide opportunities to assess the appropriateness of the tasks and to observe other areas of concern.

Once students are familiar with good conferencing procedures, peer conferencing is an alternative for students to obtain feedback and discuss progress and goals.

Continua

Continua or continuums are a series of descriptors that attempt to describe the behaviours that students exhibit as they are developing communicative competence. Teachers can use them systematically to observe and make judgements about students' progress. Although continua are designed to list descriptors according to developmental principles, most students do not develop in a linear fashion. Individual students may exhibit a range of indicators from a number of phases at any one time. Key indicators describe behaviours typical of a phase and provide a way of mapping student progress through the various levels. Students may not move through phases at a regular pace. The indicators do not describe evaluative criteria through which every student is expected to progress in sequential order, but they do provide evidence of an overall developmental pattern.

Performance Assessments

Performance assessment is defined as an assessment activity that requires students to construct a response, create a product, or perform a demonstration. Since performance assessments generally do not yield a single correct answer or method for solution, evaluations of student products or performances are based on judgements guided by criteria (McTighe and Ferrara, 34).

Performance assessments are concerned with how students apply the knowledge, skills, strategies, and attitudes that they have learned to new and authentic tasks. Performance tasks are short activities (generally between one and three class periods) that provide an opportunity for students to demonstrate knowledge, skills, and strategies. They are highly structured and require students to complete specific elements. They may be content-specific or interdisciplinary and relate to real-life application of knowledge, skills, and strategies.

Performance assessment tasks can be organized into three categories: products (such as dioramas, slide shows, reports, videotapes, et cetera), performances (such as dramatic readings, interviews, debates, et cetera), and processes (such as problem solving, co-operative learning, et cetera). In this course, each module concludes with a summative performance assessment task.

Portfolios

F. Leon Paulson defines a portfolio as "a purposeful collection of student work that exhibits the student's efforts, progress, and achievements in one or more areas. The collection must include student participation in selecting the contents, the criteria for judging merit, and evidence of student self-reflection" (60).

The physical structure of a portfolio refers to the actual arrangement of the work samples and can be organized according to chronology, subject, types of student product, or goal area. The conceptual structure refers to the teacher's goals for student learning. For example, the teacher may have students self-assess a work sample, then self-reflect, and then set a goal for future learning. The work-sample self-assessment and the goal sheet may be added to the portfolio.

Students generally choose the work samples to place in the portfolio. The teacher may also choose to have specific work samples placed in the portfolio.

The charts that follow provide examples of elements that may be included in a second-language portfolio, a sample assessment rubric, and ideas for exhibitions and projects.

STUDENT PORTFOLIO ARTIFACTS

Oral Presentations

- debates
- addresses
- discussions
- mock trials
- monologues
- interviews
- speeches

Visual and Graphic Arts

- paintings
- drawings
- murals
- posters
- sculptures
- cartoons

Performances

- role-playing

Multimedia Presentations

- videotapes
- films
- audiotapes
- slides
- photo essays
- print media
- computer programs
- storytelling
- oral histories
- poetry reading
- broadcasts

Representations

- maps
- graphs
- dioramas
- models
- mock-ups
- displays
- bulletin boards
- charts
- replicas

Written Presentations

- expressive (diaries, journals, writing logs)
- transactional (letters, reports, surveys, essays)
- poetic (poems, myths, legends, stories, plays)
- aesthetic and creative

Adapted from the *Nebraska K-12 Foreign Language Frameworks*, 1996, as cited in the *New Jersey World Curriculum Framework*, 1999.

Cloze

In cloze procedure, words or parts of words are masked or blocked out in a sentence or a short passage. Students must use other cues or clues in context, both in the text and from their background experience, to replace or complete the missing words. As students read and come to the blank in the sentence, they call on cueing systems and other sources of information to help decide what word would make sense in the sentence. With young students, perhaps only one word in the sentence would be left out. With older students, as many as eight to ten deletions in a passage would be appropriate. Experience with cloze passages encourages students to maximize their use of the cueing systems. Students choose which information sources and strategies are most appropriate when meeting unknown words, rather than overusing graphophonic clues and sounding out words without any reference to meaning or word order.

Think-Alouds

Think-Alouds involve asking students to verbalize their thoughts aloud while engaged in a task. Think-Alouds are an effective instructional strategy, can provide insight into how readers process text, and serve as a very effective assessment strategy for written interpretation and use of strategies.

Planning for Assessment

Senior 4 EAL for Academic Success has been designed from the perspective that both assessment for learning and assessment of learning are equally important. Therefore, the assessment ideas and guidelines for this course will reflect an attempt to balance both formative and summative aspects of student assessment.

In addition, teachers will benefit from having a formal and well-developed assessment plan for this and other courses. Therefore, each module has a proposed assessment plan that covers both formative and summative assessment elements, as well as suggestions for materials that may be collected in student portfolios. Details on these aspects of the assessment plans follow.

Formative Assessment Planning

The assessment plan for each module includes a section on assessment for learning or formative assessment. The assessment plans and tasks in this course fall into two categories: student learning portfolios, and classroom-based **assessment targets and tasks** for each topic. For each module, suggestions are provided for the student work and resources that may be collected to form the student learning portfolios. It is important to gather a representative sample of resources but to keep the portfolio size to a manageable level. The portfolios will allow students and teachers the opportunity to track the development and growth students will experience as they move through the course and further develop and refine their academic language skills. Criteria for reviewing, analyzing, and using the student work samples collected in the portfolios is provided.

In addition, focused assessment targets and tasks will be provided for each topic in a module. These formal formative assessment tasks are meant to provide students with important information about their learning. Teachers will use the information gathered about student learning to adjust the course plan and instructional focus or to assist specific learners. Criteria for analyzing and using the student data collected are provided.

Summative Assessment Planning

The assessment plan for each module also includes a section on assessment of learning or summative assessment. Student evaluation in this course is largely based on the **culminating project** or activity, which is provided at the end of each module. The evaluation of student performance at the end of each module will provide students with a snapshot of how well they are doing in mastering the course materials and in their academic language use. Suggestions for general criteria for the evaluation of student culminating projects or tasks are provided. Additional ideas and targets for student evaluation purposes are also provided in this section.

Using Student Portfolios for Formative and Summative Assessment

Portfolios provide an excellent assessment tool for both students and teachers to assess classroom learning. They are a good way of tracking learning over time and allow the users to chart the growth students experience through this course. By collecting student samples from each unit and analyzing the resources collected, students and teachers can gain a better understanding of how well students are progressing, and identify strengths and successes, as well as learning gaps or areas where students need to improve.

Materials gathered in the portfolio can be used for both formative and summative assessment purposes. It is important that students be made aware of what materials are to be used for both purposes, and that they play a role in deciding which elements of their work they may wish to include in the portfolio.

Each module assessment plan includes a list of items that may be collected to build the student portfolio. The information provided offers teachers some ideas and guidelines for using a student portfolio for formative assessment processes. However, teachers are encouraged to negotiate with their students the material that is to be collected and the criteria for assessment.

Building of the Portfolio

It is important to gather a number of resources from each module. The examples of student material collected should include both oral and written texts the student has created. Audio recordings, video recordings, multimedia texts, as well as print texts should be collected. The student samples collected should not be taken from the end-of-module culminating projects or tasks, which form the basis for the evaluation of student performance in each module.



**ORGANIZATION AND DESIGN OF
SENIOR 4 EAL FOR ACADEMIC SUCCESS**



Organization and Design of Senior 4 EAL for Academic Success

EAL for Academic Success reflects a number of choices that were consciously made with respect to course content and EAL-informed approaches. First and foremost, the course was influenced by the research and theoretical perspectives described in the preceding sections. The major elements of the course and the considerations that influenced the design of the course are summarized below.

A Thematic Approach

In this document, the term "text" includes spoken, written, and visual text, unless otherwise indicated. As teachers refer to the list of general and specific learning outcomes, it is important to remember that "various academic texts" include spoken texts. By "effective" we mean "produces comprehensible text with relative ease in a way that it is meaningful to the audience." It includes the aesthetic elements that affect the reception of meaning.

The course is comprised of five modules, each with several topics. Each topic builds on the module theme and allows a specific issue or facet of the theme to be explored. Each topic may contain two or three lessons or learning experiences. This structure is based on the research described earlier, specifically the research related to communicative language learning, cognitive academic language learning (CALLA), Foresee, and Essential Questions. These strategies stress the importance of creating meaningful contexts for language learning that allow students to develop language and other skills essential for academic success. The themes chosen for the five modules that form this course and their related topics provide rich opportunities to make linkages and integrate experiences from across the curricula. EAL learners need to practise the terms and concepts of content from across the Senior Years curriculum.

It is recognized that the modules contain more material than can likely be covered in a full-credit course. This allows the teacher to choose the topics of particular interest and relevance to the students. Some lessons also include optional readings and activities.

The themes of Sports Science, the Environment, Technology, Health, and Globalization have been chosen for several reasons. First, they deal with issues and concerns that have wide appeal to learners from a variety of national and cultural origins. Equally important, the themes were carefully selected because they provide an excellent base for the integration of the language and content of science, mathematics, social sciences, literature and media studies, and business into relevant topics that will likely be encountered in Senior Years and in a variety of post-secondary settings. The intent is to develop a fairly broad range of skills and experiences, which would be relevant to a variety of post-secondary areas of study ranging from the Arts to the Applied Sciences. The goal has been to include issues that are current and of high-interest, but general enough to be of enduring relevance.

The criteria for the selection of the five themes and their sub-topics were based on the following considerations:

- The themes are likely to be of high interest for students from a broad range of cultural, regional, and international backgrounds.
- Themes/topics are current and affect individuals, communities, and societies on a global basis.
- The themes allow students to be exposed to and consider issues, experiences, and perspectives that reflect contemporary Canadian culture.
- They allow for the easy integration of content, language skills, and learning strategies relevant to a range of Senior Years subjects/courses, including physical education/health, science, social studies, social sciences, mathematics, and English language arts.
- The topics allow students to engage with a variety of text forms that would be encountered in academic settings. The topics chosen can be used to practise a range of English language skills and appropriate language functions. Charts, diagrams, graphs, and other resources from mathematics, science, and social studies are incorporated into each topic that is explored in the course.

Assessment of and for Learning

Ongoing assessment of learning and for learning is essential. It is necessary to assess student learning for formative and summative purposes, and help students monitor their own progress. The teachers' ability to respond to student needs will be enhanced when they are aware of how well students are learning and the effectiveness of various teaching strategies. Therefore, each module includes an assessment plan that deals with both formative and summative assessment.

In addition, each module contains a final project requiring independent research and different forms of presentation. Within each topic, the early lessons provide an underlay of vocabulary and background information, leading to more difficult readings and writing tasks. Most lessons will include a writing task. An attempt has been made to include as many authentic academic situations as possible.

Multiple Modes of Communication

In secondary and post-secondary educational settings, students need to read and write extensively, but these skills do not develop in a vacuum, and speaking and listening skills are crucial. There is a tendency for academic EAL courses to focus primarily on reading and writing. However, these skills can decontextualize the other equally important academic language skills. Students also need to interact with one or more partners to accomplish various tasks: to research and present projects that synthesize information from several sources; and to develop and express personal stands on current issues. Therefore, a central focus of the course is the development of English language skills of listening, speaking, reading, writing, viewing, and representing for a variety of academic purposes.

Diversity of Text Types and Resource-Based Learning

A range of text types—spoken, written, and audiovisual—are explored for study and practice. Students need to develop receptive and productive skills to engage with English texts. They need to study and interact with a range of texts across various dimensions of language use: interpersonal, academic, informational, and aesthetic. The choices made in this course reflect the emphasis on academic text types that would commonly be found in Senior Years curricula and introductory post-secondary courses. In addition, texts have been carefully selected to complement the module themes and topics, allow for integration of subject-area content, and provide opportunities to explore and practise important language functions and specific aspects of English grammar and linguistic structures.

The Importance of Strategic Learning

The development of study and organizational skills and the ability to choose effective learning strategies and utilize language-use strategies to enhance communication will help ensure student success across the curriculum. Both CALLA and Foresee emphasize the importance of strategic learning. Some of the specific skills incorporated into the course include

- organizing spoken and written information through note taking and summarizing
- developing library and bibliographic reference skills for finding, quoting, and referencing resources
- constructing, interpreting, and explaining diagrams, tables, and graphs
- planning and organizing for regular classroom work routines and extended tasks
- monitoring, reflecting on, and taking responsibility for their own learning
- knowing and selecting a variety of learning and language-use strategies to enhance their learning and communication

Functional Competence

Language functions, structures, and grammar have been carefully selected to facilitate students' interaction with texts that represent a range of topics and subject-area content, and for students' successful completion of a range of academic tasks. Language functions incorporated include:

Describing and/or explaining	Giving instructions
Change	Discussing
Processes	Analyzing and interpreting
Purpose	Expressing modality
Connection	Predicting, hypothesizing
Quantity	Expressing probability
Comparing, contrasting	Expressing need, obligation
Cause and effect	Concluding
Classifying, naming, defining	

Linguistic structures and grammar that are the focus of each topic are identified in the course modules.

Integration of Outcomes

EAL for Academic Success assumes that the general and specific learning outcomes will be delivered in an integrated manner, even though they are identified individually. Similarly, although the modules contain four-column sections, single learning outcomes are rarely taught in isolation. Effective integrated language and content learning experiences in EAL classrooms typically address many learning outcomes simultaneously. The specific outcomes, strategies, and language features identified for an activity provide a focus but are not exclusive. Teaching vocabulary or grammar points in isolation is not an effective method. Activities designed to develop specific skills related to the form of the language should always be embedded in meaningful contexts; this allows students to see the purpose for learning the skill and provides immediate opportunities to use the particular form in their own productions.

Create a Context for Using Specific Learning Outcomes

The specific learning outcomes listed are not necessarily intended to be taught in the order in which they are written. Teachers are encouraged to select specific learning outcomes from across all six general learning outcomes, and to organize them into logical sequences for instructional activities. EAL instruction and assessment should always occur within meaningful contexts. Teachers develop authentic instruction and assessment focused on specific learning outcomes while developing themes, projects, tasks, and other learning experiences.

Use Learning Outcomes and Strategies Recursively

Many aspects of language arts are recursive and need to be revisited repeatedly through the use of a variety of materials and strategies. Questioning, for example, can be used repeatedly in many different contexts. Learning outcomes can be introduced using one strategy, and then revisited and extended, using different strategies or different topics, until students have achieved the particular outcomes.

Guide to Reading the Modules and Topics

Each module is comprised of several topics and related learning experiences. Each topic theme relates to the overall theme chosen for the module. A four-column format has been chosen for outlining each topic and related learning experiences. Topics covered vary in length and complexity. Some topics will require class periods to be completed. Optional activities have been provided for some topics. These are intended to provide teachers with ideas on how they may customize the course or extend the exploration of the topics.

Column one (*Outcomes*) cites the specific learning outcomes that are the focus of the topic and learning experience.

Column two (*Instructional and Learning Sequence*) includes examples of teaching and learning activities that help to illustrate the intent of the specific learning outcomes. These are organized as a series of learning sequences. The specific language features that are the focus of a specific learning experience or series are highlighted in text boxes.

Column three (*Student Learning Tasks*) provides an overview of the student learning tasks that are involved in each learning activity or event, and assignments.

Column four (*Teacher Notes and References*) provides lists of handouts that are required, provides information, additional resources or teacher reference material, and notes that assist teachers in creating effective learning opportunities.

Guide to Reading the Modules and Topics

Each module is comprised of several topics and related learning experiences. A four-column format has been chosen for outlining each topic and related learning experiences.

Column 1 (Outcomes)

Provides a list of specific learning outcomes along with an abbreviated description of each outcome. A complete list of the general and specific learning outcomes is included in the introduction of this course.

Senior 4 ELA: EAL for Academic Success					
Outcomes	Instructional and Learning Sequence				
SLO 1.1 Engage with increasingly difficult oral and/or visual texts. SLO 1.4 Show an awareness of organizational patterns. SLO 1.8 Interpret a range of texts from across the curriculum. SLO 4.1 Use language to encourage, support, and work with others. SLO 6.1.2 Use selective attention.	Sequence 2 Refer Students to Appendix 2: "How to Create a Summary." Review with students how to create a good summary of paragraphs, using point-form notes and then creating a few sentences in their own words to summarize each paragraph. Students use Appendix 3: "Skimming and Scanning for Academic Purposes" to help them read. Read over this resource as a class and discuss the techniques suggested, making sure that students understand them. (C) In triads, students skim Handout 1-16: "The Spirit of the Olympic Games." Advise students that they will be creating a summary of this article later. <table border="1"> <tr> <td>Language Features</td><td> Vocabulary professionalized; exemplified; symmetrical and harmonious development; moral; nobility; nationalist; had charge of; integrity; riddled with controversy; propaganda; commercialism; illegal competitive advantage; performance-enhancing drugs; bribery; favouritism Structures note in the assigned reading; reduction through ellipsis; participial phrases; infinitive phrases; relative clauses </td></tr> </table> In pairs, students review and compare their highlighting, deciding what information is important to include in their summaries. (P) Go over the note taking symbols and encourage students to use them. (C) The pairs compare their results, join a second pair, and repeat the process. (B) <table border="1"> <tr> <td>Language Features</td><td> Discourse Features Discussion expressions/gambits: to agree, to support, to question, to obtain more information, to add information, to disagree, etc. Note taking: creating phrases, abbreviations, etc. </td></tr> </table> Distribute Handout 1-17: "Summary Organizer" and have students fill in the graphic organizer.	Language Features	Vocabulary professionalized; exemplified; symmetrical and harmonious development; moral; nobility; nationalist; had charge of; integrity; riddled with controversy; propaganda; commercialism; illegal competitive advantage; performance-enhancing drugs; bribery; favouritism Structures note in the assigned reading; reduction through ellipsis; participial phrases; infinitive phrases; relative clauses	Language Features	Discourse Features Discussion expressions/gambits: to agree, to support, to question, to obtain more information, to add information, to disagree, etc. Note taking: creating phrases, abbreviations, etc.
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Language Features	Discourse Features Discussion expressions/gambits: to agree, to support, to question, to obtain more information, to add information, to disagree, etc. Note taking: creating phrases, abbreviations, etc.				
SLO 1.4 Show an awareness of organizational patterns. SLO 2.1.1 Analyze and edit texts. SLO 2.1.2 Use standard Canadian spelling. SLO 4.6 Respond to and critique a variety of individual perspectives. SLO 6.2.3 Use grouping of items of common characteristics to classify. SLO 6.2.4 Use note taking to write down key words. SLO 6.2.9 Use summarization to make a mental or written summary.					

Column 2 (Instructional and Learning Sequence)

Includes examples of teaching and learning activities that help to illustrate the intent of the specific learning outcomes. Effective language learning is aided by a variety of communication situations that balance teacher-fronted and group work. To assist teachers in choosing suitable configurations, most activities in Module 1 include a note indicating I (individual), C (class), G (small group), and/or P (pair).

Module 1: Issues in Sports Topic 3A	
Student Learning Tasks	Teacher Notes and References
Ask questions about how to create a summary. In trade, discuss and ask questions about skimming and scanning. • Given Handout 1-16: "The Spirit of the Olympic Games," skim the article as follows: - Go over key vocabulary. - Look at the title, subtitles. - Read the first paragraph. - Read all the topic sentences and the conclusion. - Read in-depth, paragraph by paragraph, discussing and helping each other as you go. - Highlight the parts of the article that you feel summarize it. (■) Assignment Using Handout 1-17: "Summary Organizer," work individually to summarize each paragraph in point form (in your own words) in one block of the organizer. Some blocks will have several points, while others may have only one or two.	Appendix 2: How to Create a Summary Appendix 3: Skimming and Scanning for Academic Purposes Handout 1-16: "The Spirit of the Olympic Games" Tell the students they will be reading an article about the spirit of the Olympics and creating a summary. Note that "The Spirit of the Olympic Games" does not have a real conclusion. Students will create their own conclusion later. Some key vocabulary words are mentioned in the Language Features column. These should be dealt with before an in-depth reading. You may want to create a matching exercise or a fill-in-the-blanks exercise to teach these words, or you may have students try to use context to predict their meanings. You may want to create mini-lessons to review or teach language features, using examples from the article. Handout 1-17: "Summary Organizer" Appendix 4: Note-Taking Symbols For information on gambuts, see the "Resources for Building Content-Based Language Lessons" section in Kehe and Kehe (2001), and the References in Keller and Warner (1988).



This icon indicates a list of classroom resources to be used in the sequence.



Notes and tips for the teacher are highlighted with this icon.



This icon indicates useful teacher references and resources for the sequence.

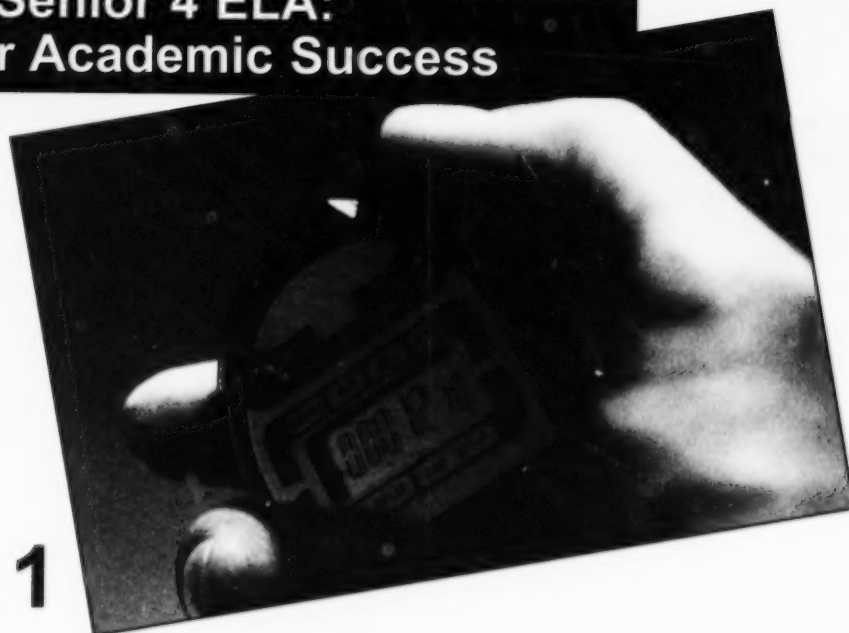
Column 4 (Teacher Notes and References)

Lists and describes the learning resources that are integral to the topic and provide a basis for the development and achievement of the learning outcomes, language features, and learning strategies that are the focus of the learning experience. Suggestions for assessment may also be included in this section.

Column 3 (Student Learning Tasks)

Provides an overview of the student learning tasks that are involved in each learning activity or event and assignments.

Senior 4 ELA: EAL for Academic Success



Module 1

Faster, Higher, Better? Issues in Sports

This module explores topics related to sports so that students can begin developing academic language skills and strategies. As students read short articles, cartoons, and informative texts, they practise scanning, skimming, and using graphic organizers to take notes and summarize. Students distinguish between main points and supporting details, and note argument structure. Language features include definition patterns, expressions for discussion, vocabulary to describe graphs and charts, transition markers, paragraph organization, expressions of personal opinion, illustrations and examples, quotations, and citations. Learning strategies are introduced and modelled in each lesson. Writing tasks include lists, short paragraphs, short essays, persuasive essays, poster presentation, and combining sentences.

Module 1

Faster, Higher, Better? Issues in Sports

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Assessment for Learning

Module 1: Faster, Higher, Better? Issues in Sports**Topic 1: What Is a Sport?**

Assessment Target: GLO 2: Students' ability to produce oral texts for a variety of subject-area tasks

Assessment Task: Use a student observation chart to record students' performance with respect to areas of success and level of difficulty (vocabulary, grammar, pronunciation).

Topic 2: Are You Fit or a Couch Potato?

Assessment Target: GLO 1/6: Students' ability to make meaning of a text through knowledge and use of a selective attention strategy

Assessment Task: Collect and review the reading "The Importance of Physical Fitness," and assess students' ability to complete the task of highlighting important information, specialized vocabulary, transition markers, examples of parallelism, and definition patterns. Give students anecdotal feedback.

Topic 3A: The Spirit of the Olympics

Assessment Target: GLO 2/6: Students' knowledge of and ability to use specific vocabulary as well as grammatical structures used in summarizing

Assessment Task: Students follow the given steps and create a short summary of an article, working first with a partner and then individually. Note students' level of proficiency in vocabulary and grammar, their selection of strategies and specific vocabulary, and their use of grammatical structures that reduce text.

Topic 3B: Swifter, Higher, Stronger?

Assessment Target: GLO 1/6: Students' ability to engage with progressively difficult oral texts to make meaning using aural comprehension, selective attention, and note taking skills

Assessment Task: Students complete the note-taking exercise using the T-list provided. Check T-List notes for comprehension and use of note-taking symbols and point-form structure.

Topic 4: Faster, Higher, Better?

Assessment Target: GLO 4: Students' ability to communicate effectively to work with others

Assessment Task: Observe and record impressions of students in the jigsaw reading activity. Look for students' attitudes, use of gambits for group participation, and knowledge of group roles and processes.

Topic 5 A: Bias in Sports: Olympic Skating Judging Scandal

Assessment Target: GLO 1: Students' knowledge of and ability to use organizational patterns, discourse features, and writing techniques for different purposes and audiences (editorial style of writing), and students' skill in expressing a personal opinion or position

Assessment Task: Students write an editorial on an issue in sports.

Topic 5B: Bias in Sports: Gender Bias

Assessment Target: GLO 4: Students' ability to recognize and value different perspectives and ability to compare, analyze, and synthesize a variety of perspectives, positions, or experiences

Assessment Task: Participate in the informal debate. Observe students' teamwork, organization of points, speaking skills, and use of discourse features from the lesson.

Topic 6A: When Sport Becomes Unhealthy: Body Image: Anorexia

Assessment Target: GLO 1/2: Students' ability to develop and express a personal opinion using new vocabulary and facts from a reading

Assessment Task: Students write a personal response to an article on anorexia. Check writing samples for use of facts from the article, accuracy of quotation or paraphrase, adjectives that express emotion.

Topic 6B: When Sport Becomes Unhealthy: Winning at All Costs: Doping

Assessment Target: GLO 1: Students' ability to make meaning of a text

Assessment Task: Students develop a timeline based on information drawn from an article read by the teacher. Check for accuracy of facts on the timeline.

Topic 7: Culminating Activity

Assessment Target: GLO 6: Students' knowledge of and ability to use socio-affective and meta-cognitive learning strategies

Assessment Task: Students self-assess their poster presentation in Learning Logs. Collect and read, noting students' ability to self-evaluate.

Portfolio

Item	Description
1	Topic 3A: Summary of the Spirit of the Olympic Games (writing sample)
2	Topic 6: Audio or video tape of the oral presentation Sample of a student learning journal of their choice from any of the topics
3	Topic 7: Culminating project self-evaluation
4	Student-selected journal entry

Assessment of Learning

Item	Description
The assessment focus for Module 1 is to develop a picture of the linguistic proficiency and performance level of the individual students and the class as a whole.	
1	Vocabulary test on selected academic vocabulary and discourse markers from the unit
2	Topic 5B: Assessment Target: GLO 2/3: Students' ability to write a persuasive essay, incorporating outside references with appropriate and accurate documentation Assessment Task: Students write a short persuasive essay on the topic of gender bias in sports. Check for use of outside sources, new vocabulary, and persuasive essay format.
3	Topic 6B: Assessment Target: GLO 1/2: Knowledge of organizational discourse patterns, targeted academic verbs, and organizing texts for different audiences and purposes Assessment Task: Students make an oral presentation or written report on a performance-enhancing drug. Check for completeness of research and use of targeted discourse markers and verbs.
4	Culminating Project: Poster Presentation of a Chosen Sport The poster presentation that occurs at the end of this module is the main summative evaluation item for this module. The culminating projects in each module are designed to assess progress in all the GLOs. Criteria for Assessment: Using the assessment criteria provided in Topic 7, develop a rubric for evaluating the students' performance, or use the sample poster presentation rubric.





Topic 1
What Is a Sport?

(1 lesson)

This lesson provides an introduction to the module theme and to some of the activities common to the course. Students brainstorm, write definitions, use a Venn diagram to classify, and develop basic sports vocabulary. They are introduced to three tools that will

be used throughout the course: the personal dictionary, the journal, and the Learning Log. The culminating assignment is introduced: a poster presentation of a chosen sport.

Outcomes

Instructional and Learning Sequence

SLO 1.3 Develop and express a personal position in a variety of ways (e.g., express likes/dislikes, opinions...).

SLO 4.3 Use clear and respectful language to express personal opinions and to respond to others.

SLO 3.2 Develop and implement a plan for researching topics...

SLO 1.5 Examine and interpret various visual media...

SLO 1.6 Interpret a range of texts...

SLO 1.7 Evaluate a given text...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 4.4 Manage group action...

Sequence 1

Activation

Present several pictures of traditional sports, non-traditional sports, and other activities that might not be considered to be sports (e.g., chess, gardening). (C)

Brainstorm for the defining characteristics of a "sport" and come to a consensus on three characteristics. (C)

Write a definition of sport on the board that models the following discourse features:

Language Features

Discourse Features

Definition patterns: A (item) is a (general class) that/with (defining characteristics); a (item) is like a (synonym).

Expressions of opinion: I think + (noun clause) + because + (noun clause) (e.g., I think that bowling is a sport because you need skill and you compete).

Students **brainstorm** as many Olympic sports as possible. Record these on a poster or the board. (C)

Round-Table

Ask students to name their favourite sport, and to use Discourse Features: Expressions of Opinion to show why it is their favourite sport. (C)

Language Features

Vocabulary

names of sports

Discourse Features

Expressions of reference: I like _____ because _____;
My favourite sport is _____ because _____.

Assignment

Poster Presentation of a Chosen Sport

Introduce and explain the poster assignment. If possible, model a poster designed for presentation. Allow students ample time in class to begin work. Guide them to possible resources. Students should make a plan for dividing and sharing the work. You may designate check-in points throughout the module to keep track of progress. If necessary, allow students one or two days of class time at the end to finish. (P)

Discuss **Handout 1-1: "Poster Presentation Evaluation Rubric"** to assess the poster project with students at the beginning of the project, and periodically remind them of the criteria throughout the module.

Due Date: When instruction of this module is complete

Student Learning Tasks

Teacher Notes and References

Brainstorm the characteristics of a sport.

In co-operative groups or as a class, decide which of the pictured presented activities are sports, based on the defining characteristics. Use **Discourse Features: Definition patterns** and **Expressions of opinion** to help you express your ideas.
(B)(C)

Brainstorm Olympic sports.

Name your favourite sport, and use **Discourse Features: Expressions of opinion** to show why it is your favourite sport.

Assignment

Poster Presentation

In pairs, **research** one Olympic sport and display findings on a large poster. Use the following topics to organize your work:

- A brief history of the sport
- Areas of popularity
- Setting and equipment
- How the sport is played (basic rules)
- Physical requirements to excel
- A brief biography of a famous player
- The use of sports science to improve performance
- Any controversy connected with the sport



Suggested Background

Article: "Using Posters in Content Courses" from *The Internet TESL Journal*

The Internet TESL Journal contains many useful articles about teaching academic EFL/ESL. This article is adapted from a Japanese Association of English Teaching conference. It is available at <http://iteslj.org/Lessons/Sheffner-Posters.html>.



Research is defined as a four-step process in the "Teaching and Learning EAL" section in the Appendices.



Handout 1-1: "Poster Presentation Evaluation Rubric" to assess the poster project

Outcomes

SLO 2.2 Use several techniques... to convey factual information and clarify relationships

SLO 4.3 Use clear and respectful language...

SLO 6.1.2 Use organizational planning to choose good organizational strategies...

SLO 2.3 Produce a variety of short and extended text forms necessary for subject-area tasks...

Instructional and Learning Sequence

Sequence 2

The Language of Venn Diagrams

Introduce Handout 1-2: "Language Associated with Venn Diagrams" and explain the language necessary to interact with Venn diagrams.

Assign the Venn diagram task.

Language Features

Vocabulary

Venn diagram, compare/contrast, classify

Discourse Features

comparison/contrast markers

Brainstorm with a web the requirements for becoming a top athlete (possible categories: body, training, attitude, coach, money, equipment).

Language Features

Vocabulary

performance, train, coach, equipment

Introduce Handout 1-3: "Check Out What You're Doing Now!," and explain to students how they will be using it the next day. At this point, record activities for the previous day. Model on the board. Students should complete the rest of this day's activities at home.

Language Features

Vocabulary

estimate, strenuous, moderate, light

Idioms: check out, jot it down

Student Learning Tasks

Working in groups, use a **Venn diagram** to compare and contrast sports that depend more on the technology (equipment such as skates) or on the athlete's skill. (6)

As a class, brainstorm requirements for being a top athlete. (6)

Begin to work on **Handout 1-3: "Check Out What You Are Doing Now!"** by recording activities for yesterday. This is to be completed for homework. (1)

Teacher Notes and References

Handout 1-2: "Language Associated with Venn Diagrams"



Students need to acquire the compare and contrast markers necessary for discussing or writing about Venn diagrams.

You may want to enlarge the Handout 1-to make a classroom poster for future reference.



Handout 1-3: "Check Out What You Are Doing Now!"

Outcomes

SLO 6.1.2 Use organizational planning to choose good organizational strategies...

SLO 6.1.3 Use directed attention to decide in advance to focus on a learning task...

Instructional and Learning Sequence

Sequence 3

Roundup

Roundup activities assist students in refining their application of language knowledge and skills acquired, and/or reflection on their use of learning strategies.

Introduce and model how **journals** are to be used. Explain the three sections. (See "Teaching and Learning EAL in the Senior Years" in the Appendices of this document for more information on journals.)

- Students add new structures, strategies, or concepts encountered in the Learning Log section.
- Students add vocabulary to their personal dictionaries. Ask students whether they learned any words or structures that day that need to go in their dictionary.
- Students choose any five response prompts from the Personal Response section, and write three sentences about each one.
- Ask students to write three sentences for each prompt. This requires them to reflect on more than the surface level.

Student Learning Tasks**Assignment**

Begin to keep a **journal** by doing the following:

- Adding new structures, strategies, or concepts encountered in the topic
- Adding vocabulary to your personal dictionary
- Choosing five response prompts from the Personal Response section and writing three sentences about each one

Teacher Notes and References

Journal template with sample prompts and responses, sample Learning Log page, suggested personal dictionary formats (teacher-provided)



For more information on journals and Learning Logs, see "Teaching and Learning EAL in the Senior Years" section in the Appendices.



Topic 1 presents three types of roundup activities that teachers should use throughout the course when the term "roundup" appears.

Additional roundup activities may be provided for separate topics.

Poster Presentation Evaluation Rubric

	3 Excellent	2 Adequate	1 Needs improvement
Information is accurate and thorough.	Relevant, accurate, and well-developed	Mostly relevant and accurate	Not relevant or inaccurate
English grammar and spelling are accurate.	Minor isolated errors in grammar and/or spelling	Sporadic errors in grammar and/or spelling	Frequent errors in grammar and/or spelling
Vocabulary used is appropriate to the topic and sports in general.	Effective word/idiom choices and usage that enhance meaning	Occasional errors of word/idiom choices and usage that do not obscure meaning	Inappropriate or incorrect word/idiom choices and usage that obscure meaning
The poster is attractive in terms of neatness, layout, and design.	Well-organized, effective, and relatively sophisticated design	Somewhat appropriate design that aids meaning	Ineffective design or sloppy or incomplete work
The presenter is able to speak about the material fluently and with accurate pronunciation.	Presentation was effective and clear	Presentation was comprehensible with some errors in pronunciation	Presentation was hard to follow, was difficult to comprehend, and included frequent mispronunciations



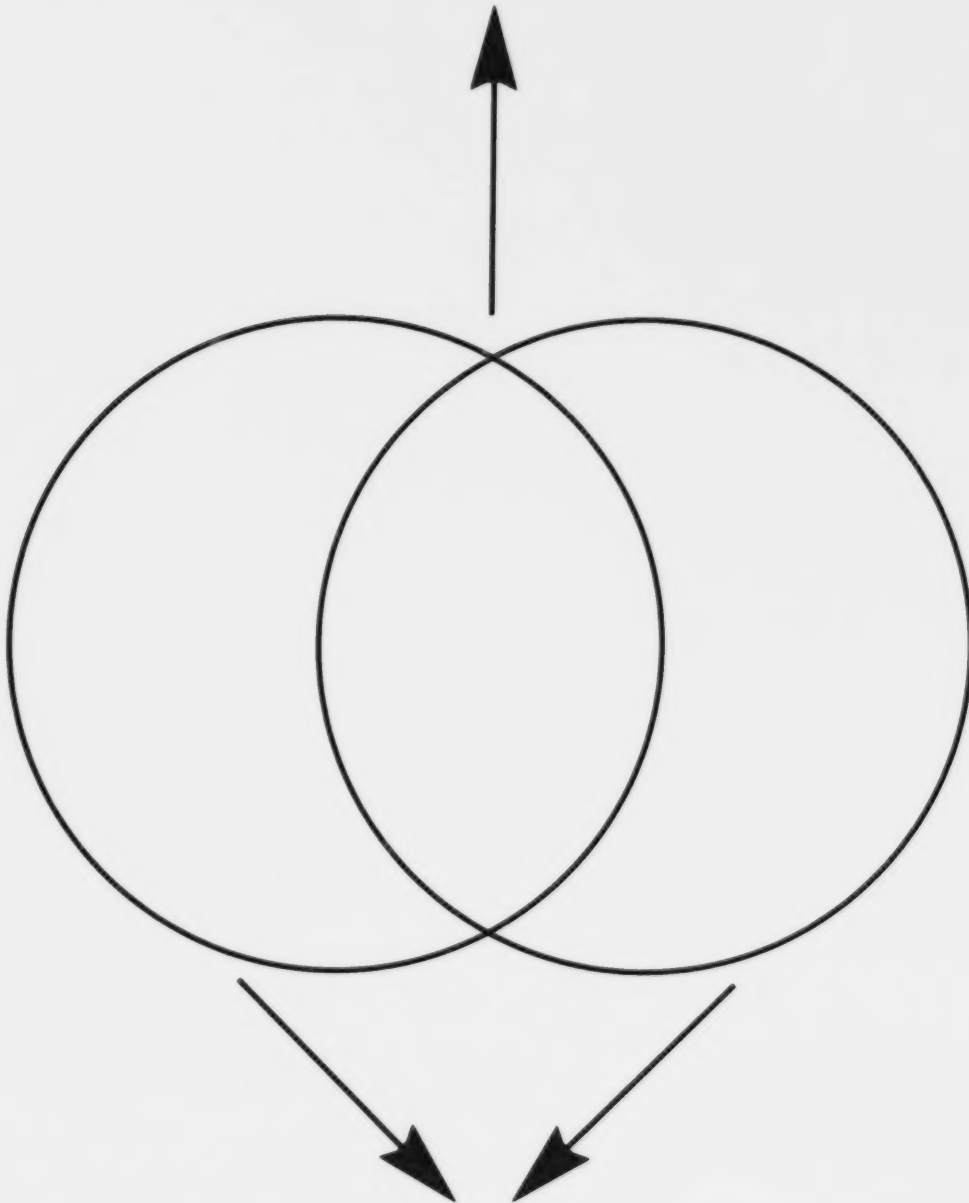
Language Associated with Venn Diagrams

similarly
is like
both

likewise
is similar to
also

in the same way that
have in common
as well

just as
compared to
too



in contrast
but
still
on the other hand

unlike
whereas
however
while

although
on the contrary
differs from
even though

conversely
yet



Check Out What You're Doing Now!

Take a moment to write down all the physical activities you did yesterday and will do today. Record them on the form. How much time did you spend in each activity? Jot that down, too.

[illegible]





Topic 2

Are You Fit or a Couch Potato?

(2 lessons)

This lesson focuses on physical fitness. Students learn about the benefits of physical fitness and devise a plan to become more physically fit by filling in an energy expenditure chart to discover the number of calories they are burning each day. They also learn how to increase this number, and write about their plan to become more physically fit. Some academic tasks are:

- following instructions
- describing and analyzing a cartoon
- understanding humour
- giving examples
- explaining a point
- describing a process
- developing pronunciation skills
- presenting ideas
- expressing opinion and stating a point of view
- deducing the meanings of unfamiliar words and word groups
- extracting relevant points
- understanding relationships between parts of a text through lexical and cohesive devices and through recognizing indicators in discourse
- working in a group
- writing a paragraph using the writing process
- following specific instructions

Outcomes

SLO 1.3 Develop and express a personal position...

SLO 1.5 Examine and interpret various visual media...

SLO 4.1 Use language to encourage, support...

SLO 5.2 Analyze and use the appropriate level of formality...

SLO 6.2.8 Use imagery...

SLO 6.2.10 Use translation to change language...

Instructional and Learning Sequence

Sequence 1

Activation

Ask students to look at the title on **Handout 1-4**: "Physical Fitness Requires Determination and Effort." Ask students to explain what the title means. (C)

Discussion

Is physical fitness a current topic of interest in your country of origin? What are the most common means of becoming physically fit? Is physical education a part of school curricula? Do you feel you are physically fit? (C) Students share their answers as a class.

Discuss North American humour. What makes these cartoons funny? How does the title add to the humour? Introduce the term "idiom." Introduce the idiom "couch potato." Ask students if they have similar idioms in their first languages and to translate and explain the idioms. (C)

Introduce Learning Strategies

Have students refer to **Handout 1-5**: "Learning Strategies for Better Second Language Acquisition" and Appendix 1 for strategies. Pick one or two important strategies from each lesson to model and explicitly discuss. Students try to use all strategies in Handout 1-5 by the end of the course and decide which ones work best for them. Highlight the two strategies that would help in making sense of idioms.

Language Features

Vocabulary

Idiom: couch potato

Discourse Features

Expressions for discussion:

To agree:

I think that's a good idea; I agree with you; exactly; etc.

To disagree:

I don't think so; I'm not sure I can agree with that point; etc.

To question:

Can you explain what you mean? I don't understand; etc.

To add information:

Also...; There are some other examples of...; etc.

To interrupt:

Excuse me...; I have a question; Sorry to interrupt, but...; etc.

Student Learning Tasks

Explain what the title means on **Handout 1-4**: "Physical Fitness Requires Determination and Effort." (C)

Share your responses with the class.

In groups of three, study the cartoons and decide what aspects of physical fitness are being addressed. (B)

Discuss idioms from your first language.

Translate and explain the idioms. (C)

Optional Assignment

At this point, the teacher may ask you to monitor or record your use of the strategies in your Learning Log.

Teacher Notes and References

Handout 1-4: "Physical Fitness Requires Determination and Effort"



Handout 1-5: "Learning Strategies for Better Second Language Acquisition"

Appendix 1: Strategies for Second Language Acquisition



Keller and Warner (1988) provides detailed information on Conversation gambits. (See Bibliography.)

Outcomes	Instructional and Learning Sequence
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SLO 6.2.12 Use inferencing to guess meanings...

SLO 6A.6 Use selective attention...

SLO 1.3 Develop and express a personal position...

SLO 5.6 Evaluate texts for purpose, bias, and implications...

Sequence 2

Distribute Handout 1-6: "Testing Your Knowledge about Exercise." Students work in small groups to preview new vocabulary, and to guess first at meanings from context or prior knowledge. (B) With the class, highlight words such as physical, metabolism, calories, muscle, activity, and incremental, telling students that in this module they will see other forms of these words created by the use of affixes. (Review how affixes change words.) Ask students to note these words when they find them. After completing the quiz, students compare answers with a partner. (C)

Distribute Handout 1-7: "Testing Your Knowledge about Exercise" Answer Key. Correct with the whole class, explaining the vocabulary used in different parts of speech because of suffixes. (C)

Language Features	Vocabulary
	Examples of vocabulary in quiz: metabolism, calories, resting pulse, energy, cardiovascular, frequency, intensity, duration, accessible, incremental Vocabulary in answer key (some, like the word strenuous, will be a review of vocabulary in Topic 1): caloric expenditure, accumulative, maximizes, gimmicks, strenuous, decline, overstated, spot reduction, genetic, hormonal, aerobic, psychological, sedentary, intensity, negative caloric balance, blunt, incremental Suffixes to change part of speech e.g., metabolic~metabolism, calories~caloric, accumulate~accumulative, expend~expenditure

SLO 3.1 Seek, organize, and synthesize information...

Students work in groups of three to discuss personal fitness charts filled in for homework, determining their personal levels of physical fitness. (B)

Language Features	Vocabulary
	Fitness words and expressions: fairly active, active, athletic
	Discourse Features
	comparing and contrasting markers to discuss fitness levels

Student Learning Tasks

Work in small groups to preview new vocabulary, and to guess first at meanings from context or prior knowledge. (6)

Note words that are changed by adding affixes when you find them. (6)

Complete the quiz (1) and compare answers with a partner. (P)

Assignment

Correct your quizzes as a whole class.

Work in groups of three to discuss and determine your personal level of physical fitness, as derived from the previous day's homework: "Check Out What You're Doing Now!" personal fitness charts. (6)

Teacher Notes and References

Handout 1-6: "Testing Your Knowledge about Exercise."



Handout 1-7: "Testing Your Knowledge about Exercise" Answer Key



Some of the vocabulary will be used recursively during the course of this module. There will be good opportunities to teach the importance of affixes, including several examples in these two readings.

Outcomes

SLO 1.6 Interpret a range of texts...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.1.3 Use developing control of grammatical structures...

SLO 5.2 Analyze and use the appropriate level of formality...

SLO 6A.6 Use selective attention...

SLO 6.2.11 Use transfer to make language a language task easier...

Instructional and Learning Sequence

Sequence 3

Distribute Handout 1-8: "The Importance of Physical Fitness." Discuss important vocabulary and find words that change their parts of speech due to the use of suffixes. **(C)**

Students read the article in small groups, highlighting the main ideas/important information and noticing the use of specialized vocabulary, structures, and discourse features. These include transition markers, parallelism, and definition patterns, some of which were introduced in Topic 1. Students identify context clues that help with their understanding of new vocabulary. **(B)** Review as a class. **(C)**

Language Features

Vocabulary

vital, maintaining relaxation, endurance, flexibility, vigorous

Idiom: surfing the Internet

Structures

Verbs used in defining: is, is known as, is called, is referred to as, etc.

Imperative verbs used to discuss how to develop a fitness plan: increase, decrease, build up, include, set, congratulate

Suffixes: maximize~maximum, continuous~continuously, etc.

Non-essential relative clauses—use of relative pronoun and proper punctuation

Discourse Features

More definition patterns/context clues:

a/an (item), or (synonym)

a/an (item), (example)

a/an (item), such as (example)

Verbs used in defining: is, is known as, is called, is referred to as, etc.

Discourse markers: to begin, next, in addition, finally

Student Learning Tasks**Teacher Notes and References**

In small groups, read the article in **Handout 1-8: "The Importance of Physical Fitness"** in order to

- highlight the main ideas/important information
- mark the specialized vocabulary, structures, and discourse features such as transition markers, parallelism, and definition patterns
- identify context clues that help with the understanding of new vocabulary (■)



Handout 1-8: "The Importance of Physical Fitness"

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 2.2 Use several visual techniques...

SLO 6.3.2 Use cooperation to work together with peers...

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.4 Show an awareness of organizational patterns...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check, verify...

SLO 6.2.2 Use repetition to imitate a language model...

Instructional and Learning Sequence

Distribute Handout 1-9: "Introduction to the Energy Expenditure Chart." Select students to read the directions out loud (**C**). Students co-operate with a partner to express the directions in their own words, using the reading and looking at the "Introduction to the Energy Expenditure Chart." (**P**) As a class, clarify instructions using the sample energy expenditure chart and directions provided. (**C**)

Language Features

Vocabulary

metabolic equivalent, per, strenuous, moderate, fatigued

Structures

Punctuation: No period is used with metric abbreviations unless it is at the end of a sentence.

Discourse Features

sequencing steps of a plan using numbers

Ask students to fill in **Handout 1-10:** "Energy Expenditure Chart" individually using the reference chart provided as part of **Handout 1-9:** "Introduction to the Energy Expenditure Chart." (**I**) Student pairs regroup to compare their results. What conclusions can they draw about changes they must make to improve their levels of physical fitness and, for some, to lose weight (e.g., increase more strenuous activity, reduce intake calories so they are lower than calories expended, et cetera)? (**P**)

Use Handout 1-11: "It's Not So Bad" as a motivator for change. Have one or several students read the poem out loud. Focus on correct pronunciation, stress, and rhythm. Point out the rhyme scheme (rhymed couplets). Discuss the ideas about physical fitness expressed by the speaker in the poem. (**C**)

Language Features

Vocabulary

dawning

Idiom: pounding the cement

Structures

use of quotation marks with titles of poems

Pronunciation

- reductions—contractions
- sounds: l, r, th
- rhythm
- stress patterns of English
- linkage

Student Learning Tasks

Selected students read the directions out loud. (C)

In pairs, co-operate to express the directions in your own words, using **Handout 1-9**: "Introduction to the Energy Expenditure Chart." (P)

Individually, fill in **Handout 1-10**: "Energy Expenditure Chart."

In pairs, compare your results and reach conclusions about the changes you must make to improve your level of physical fitness.

Read the poem out loud. Focus on correct pronunciation, stress, and rhythm.

Teacher Notes and References



Handout 1-9: "Introduction to the Energy Expenditure Chart"

Handout 1-10: "Energy Expenditure Chart"



Students should already be prepared for this reading, as many of the important vocabulary words have been introduced in previous readings.

Lesson plan for "Grades 8–12: Energy Balance—The Ins and Outs"



Metric abbreviations are used without a period—see

Appendix 21: "How to Express Numbers in Written Work."



Handout 1-11: "It's Not So Bad"



You might want to give a pronunciation mini-lesson on problematic sounds and linkage rules in English.

Outcomes

SLO 1.2 Respond to texts with increasing independence.

SLO 2.1.1 Analyze and edit text for word choice...

SLO 2.1.3 Use developing control of grammatical structures...

SLO 2.3.1 Use the structures and language features appropriate to the text type...

SLO 3.1 Seek, organize, and synthesize information...

SLO 1.2 Respond to texts with increasing independence.

SLO 2.2 Use several visual techniques...

Instructional and Learning Sequence

Individual students **read aloud** one of the suggested activities from **Handout 1-12: "Twenty-five Ways to Get Moving."** Ask them what verb form is used to list each of the suggested activities (imperative). Using the charts done for the previous day's homework, the energy expenditure chart, and ideas from the poem and readings, students synthesize the information and, as a class, brainstorm ideas for positive fitness changes in their own lives. Record ideas on the board or on chart paper. **(C)**

Language Features**Structures**

imperative verbs used in giving directions or listing steps

Distribute Handout 1-13: "My Very Own 25 Ways to Get Moving—Starting Today" and introduce the writing assignment.

Writing Assignment

Students create their own "Twenty-five Ways to Get Moving," using Handout 1-10: "My Very Own Twenty-five Ways to Get Moving—Starting Today!"

Students use the imperative in creating their lists. **(I)**

Introduce and explain **Handout 1-14: "Chart: Change in Caloric Expenditure."** **(C)** Introduce or review vocabulary associated with the chart. Students will use this chart to graph their progress in increasing their own caloric expenditure. Plan to monitor these charts.

Language Features**Vocabulary**

To describe the graphing process: horizontal axis, vertical axis, graph, scale, plotting points, origin, line of best fit

Student Learning Tasks

Read aloud one of the suggested activities from **Handout 1-12: "Twenty-five Ways to Get Moving."**

Identify the verb form used in the list.

Brainstorm ideas for positive fitness changes.

Writing Assignment

Create your own "Twenty-five Ways to Get Moving," using **Handout 1-13: "My Very Own Twenty-five Ways to Get Moving—Starting Today!"**

Use the imperative in creating your lists. (I)

Assignment

Use **Handout 1-14: "Chart: Change in Caloric Expenditure"** to graph your progress in increasing your own caloric expenditure.

Teacher Notes and References



Handout 1-12: "Twenty-five Ways to Get Moving"



Read-alouds are a perfect opportunity to recognize and focus on specific difficulties students have with

pronunciation. Some errors will interfere with the student's ability to be understood by native speakers. Other errors will not affect intelligibility but may need work in order for the student to more closely approximate the pronunciation of an English language speaker.

Students may get a better idea of the calories expended during some common activities by going to Kraft Calorie Burner at <http://web.kraftfoods.com/kf/HealthyLiving/HL.htm>.

They can type in their weight and click on an activity and an amount of time, and the program will calculate the number of calories burned.



Handout 1-13: "My Very Own Twenty-five Ways to Get Moving—Starting Today"



Handout 1-14: "Chart: Change in Caloric Expenditure"



You may have to renumber the vertical axis to best reflect students' beginning level of fitness.

Outcomes

SLO 1.3 Develop and express a personal position...

SLO 2.1.1 Analyze and edit text for word choice...

SLO 2.1.2 Use standard Canadian spelling...

SLO 2.1.3 Use developing control of grammatical structures...

SLO 2.4 Use the steps of the writing process...

SLO 3.1 Seek, organize, and synthesize information...

SLO 5.1 Identify common themes and symbols...

SLO 6.1.2 Use organizational planning...

SLO 6.3.2 Use cooperation to work together...

Instructional and Learning Sequence

Writing Assignment

Introduce Homework Assignment: For homework, students write a short text of 200 to 250 words in which they discuss their personal fitness plan. Review the rules of writing proper paragraphs and the writing process. (C)

Share the assessment rubric for the assignment with students and discuss.

Language Features

Structures

appropriate use of vocabulary words in sentences

Discourse Features

Organizational structure of a paragraph: topic sentence, transition markers, supported points, concluding statement

Discourse markers: appropriate markers for transition, listing steps in plan

Sequence 4

Roundup

This lesson provides an opportunity to explicitly teach a strategy of co-operation.

Discuss with students how and when they choose to co-operate to assist their learning, and if and when it was helpful in this lesson. (C)

Student Learning Tasks**Assignment**

Write a paragraph of 200 to 250 words to discuss your personal fitness plan.

Use and include at least five new vocabulary words as well as three transition markers.

Discuss when and how you used co-operation to assist your learning.

Teacher Notes and References**Review**

Rules of writing proper paragraphs (See the Resources for Building Content-Based Language Lessons section for specific reference materials.)



Assessment rubric (teacher-developed)

See the Assessment section on page 33 of the introductory portion of this document for sample assessment rubrics.



The strategy of co-operation is found in the Teaching and Learning EAL in the Senior Years section in the Appendices.



Physical Fitness Requires Determination and Effort



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Learning Strategies for Better Second Language Acquisition

This is a list of proven strategies used by successful second language learners. Do you use any of these strategies? Will you try some of them?

Meta-cognitive Strategies (higher order skills; cold, organizational strategies):

1. Advance organization: Do I look carefully at a text before I read? Do I look at the way it is organized? Do I examine maps, graphs, titles, subtitles, bolded terms, etc.? Do I skim to get an overall idea?
2. Organizational planning: Do I plan what I say and do beforehand?
3. Directed attention: Do I decide before I start a task to ignore all the distracters around me?
4. Selective attention: Do I pay special attention to special aspects of a learning task? Do I listen for key words in lectures? Do I notice important words in questions and on tests?
5. Functional planning: Do I plan and rehearse before I perform a language task?
6. Problem identification: Do I explicitly look at the central problems that need to be resolved so I can complete a task correctly?
7. Self-monitoring: Do I check what I am doing as I am doing it? Do I make sure I am on track? Do I edit as I go? Do I think about what I should be listening for and remembering in a lecture?
8. Self-evaluation: Do I check my understanding after a lecture or discussion? Do I check my work after it is completed? Do I always edit carefully?

Cognitive Strategies (used while manipulating the material; strategies that help one grow and develop as a learner):

1. Prediction: Do I try to guess or predict what a lesson, text, assignment, or story will be about before I start the activity?
2. Elaboration: Do I activate what I know about this topic before I start the new work? Do I discuss with others to share information? Do I try to link the new information with information I already have?
3. Auditory memory: Do I rehearse and practise new vocabulary? Do I try to use new words so I become more familiar with them and remember them?

4. Note taking: Do I take notes of all important information in all classes? Do I know when to take notes in a lecture? Do I feel comfortable making point-form notes? Can I take notes in my own words?
5. Grouping or classifying: Do I group similar ideas and concepts together to remember them? Do I look for similarities and connections?
6. Imagery: Do I use the titles, headings, bolded words, graphs, maps, visuals, etc. to understand, learn, and remember a difficult text?
7. Inferencing: Do I use information in oral and written texts to predict meanings, complete missing parts, and guess meanings of new terms, et cetera?
8. Summarizing: Do I try to summarize an activity, lecture, lesson, or text after it is finished to help myself understand and remember what I have heard or read?
9. Transfer: Do I try to use what I know and apply it to something new?
10. Deduction/induction: Do I apply rules I know or figure out new rules to help me produce or understand my second language better?
11. Translation: Do I use translation to help me when I need help in understanding?
12. Substitution: Do I try different ways of solving language problems when one way isn't effective?
13. Recombination: In order to improve my writing skills, do I try to make my sentences longer or more complex by using meaningful sentence combining?

Social/Affective Strategies ("warm fuzzy" strategies that require one to interact with others):

1. Co-operation: Do I work with others to solve a problem, check notes, pool information, or check understanding?
2. Questioning for clarification: Do I ask my teacher or peers for more information, additional examples, or rephrasing for better understanding? Do I tell someone when I don't understand and ask for help?
3. Positive self-talk: Do I talk myself through a difficult task to lessen worry and to convince myself I can be successful?



Testing Your Knowledge about Exercise

Testing Your Knowledge About Exercise

Please answer the questions below to see how well you know the effects of increased physical activity.

- | | | |
|------|-------|--|
| True | False | 1. There is no such thing as a slow or under-active metabolism. |
| True | False | 2. Exercise isn't of much use for dieters because it burns relatively few calories. |
| True | False | 3. Exercise can help prevent the loss of muscle tissue from the body. |
| True | False | 4. Walking one mile burns nearly the same number of calories as running the mile. |
| True | False | 5. Expensive exercise suits are worth the money because the special materials help the body. |
| True | False | 6. Climbing the stairs requires more energy per minute than traditional exercises, like swimming and jogging. |
| True | False | 7. Your resting pulse will increase as you lose weight and get in better condition. |
| True | False | 8. To get a cardiovascular training effect, there must be the right combination of frequency, intensity, and duration. |
| True | False | 9. No exercise can help you lose fat in specific parts of your body. |
| True | False | 10. There are many benefits to jogging and cycling. They are good forms of exercise for people trying to lose weight. |
| True | False | 11. Using stairs is a convenient and accessible way for many people to increase activity. |
| True | False | 12. American adults are physically more active than they were 200 years ago. |
| True | False | 13. You should not exercise if you feel hungry because exercise will increase your appetite. |
| True | False | 14. When you go on a diet, your body loses fat but not muscle tissue. |
| True | False | 15. Small, incremental, and consistent exercising activities can provide large benefits for the dieter. |

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"Testing Your Knowledge about Exercise" Answer Key

1. **False** Humans vary on all traits, including metabolic rate. The causes of these variations are not well understood. But, even if you do have a relatively slow metabolic rate, exercise will cause an increase in caloric expenditure and will contribute to weight loss.
2. **False** It may be easier to eat 100 calories than to burn 100 calories through exercise, but the accumulative effect of exercise can increase caloric expenditure by several hundred calories per day. Remember that exercise provides many positive benefits aside from energy expenditure.
3. **True** Exercise maximizes the loss of fat and can help prevent the loss of muscle. In fact, exercise can build muscle tissue.
4. **True** How far you go is more important than how fast you go. It is not the rate of caloric expenditure that is important in weight loss, but the total number of calories that are burned. If you prefer to burn calories at a slower rate by walking instead of running, the effect on weight loss will be the same. Of course, running will get the job done faster!
5. **False** The rubberized "sweat suits" and other fancy gimmicks do not provide any benefit. In fact, they may cause you to overheat, especially in warmer weather. Wear clothing that is comfortable for you.
6. **True** Climbing stairs is an excellent way to burn a lot of calories. It is so strenuous that you will not be able to climb continuously at a fast rate unless you are very fit. You can accumulate significant caloric expenditure over the course of a day if you regularly take the stairs rather than the elevator.
7. **False** Your resting pulse rate will decline as you become more physically fit. This is a sign that your heart is getting stronger and can pump more blood with each heart beat.
8. **True** Improvement in fitness is related to the frequency, intensity, and duration of exercise. In the past, many people have overstated specific combinations of these variables that must be achieved to obtain certain health benefits. You should not worry about achieving a specific dose of exercise, but focus on increasing your activity level. Even modest increases in activity will, over time, produce changes in fitness and provide other benefits as well.
9. **True** Unfortunately, "spot reduction" just does not work. Your body adds and removes fat according to genetic and hormonal factors. You must concentrate on increasing caloric expenditure and achieving a negative caloric balance. When you do this, you can reduce fat in general, but you cannot control the areas where the fat will be lost.
10. **True** Jogging and cycling are excellent aerobic exercises and are ideal for many dieters. They provide both psychological and physical benefits. They burn a lot of calories quickly, make improvements in overall physical fitness, and make you feel good. Lower intensity activities such as walking also make important contributions to fitness, health, and weight control; but it may take a little longer.

(continued)

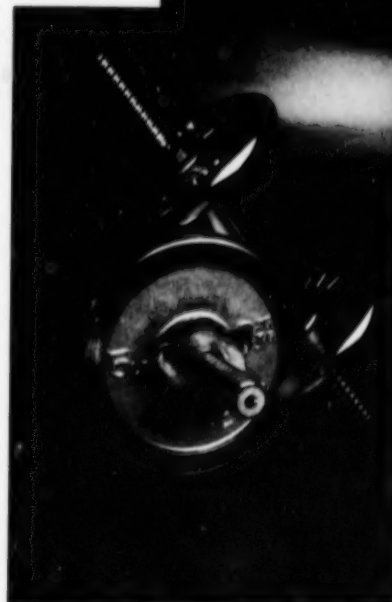
"Testing Your Knowledge about Exercise" Answer Key (continued)

11. *True* Most people have access to stairs, so it is easy to add several flights to your daily routine. Look for opportunities to build stair climbing into your day.
12. *False* Due to technological achievements, there is much less occupational physical activity today than there was 200 years ago. Motorized transportation and countless labor-saving devices have greatly reduced activity on the job and in leisure time.
13. *False* If anything, exercise will temporarily blunt your appetite, although in the long-run, more exercise will require more calories. However, exercise seems to help regulate caloric intake to appropriate levels. Regular exercisers weigh less than their sedentary peers.
14. *False* Caloric restriction causes significant loss of muscle tissue. Weight lost by exercise or by a combination of exercise and diet, tends to come predominately from fat stores.
15. *True* Building small incremental activities into your daily routine can have significant benefits in both weight loss and weight maintenance programs. The total accumulation of energy expenditure is what is important to weight loss efforts. Strive to accumulate several activities over each day.

The Importance of Physical Fitness

It is a fact: physical activity is vital in maintaining a healthy lifestyle. Physical activity strengthens the heart, helps people achieve and maintain a healthy weight, builds and maintains strong bones and muscles, and increases relaxation, to name just a few of its many benefits. To obtain the best results, a person must combine three types of physical activity: endurance activities (aerobic or cardiovascular exercise), which increase one's breathing and heart rate, causing perspiration or sweating; flexibility activities, such as bending, stretching or reaching, which help relax muscles and keep joints moving; and strengthening activities, which build muscles and bones.

What part does physical activity play in your life? Health professionals are recommending that all youths try to increase their physical activity by at least 30 minutes a day to begin and up to 90 minutes per day over a five-month period. To begin, increase the time currently spent on physical activity each day. Next, decrease the non-active time spent on TV, videos, computer games, and surfing the Internet. In addition, build up physical activity throughout the day in periods of at least five to ten minutes. While your physical activity may include moderate activities like brisk walking, also include at least ten minutes of vigorous activity, like playing soccer or running. Finally, set attainable goals and record your progress. With each increase, congratulate yourself and share your progress with your peers.





Introduction to the Energy Expenditure Chart

Many people find it useful to keep a progress chart to record their physical activity. The following chart is an energy expenditure chart. A person can estimate the number of calories expended daily by listing the number of hours spent at various MET levels. MET means metabolic equivalent, or the energy (calories) expended while a person is at rest. A general guideline is that a person spends one calorie per kilogram of body weight per hour while resting. There are five different MET levels: sleep, light, moderate, strenuous, and very strenuous. The following list shows the METs expended at each level and gives a general guide of the types of activity to include at each level:

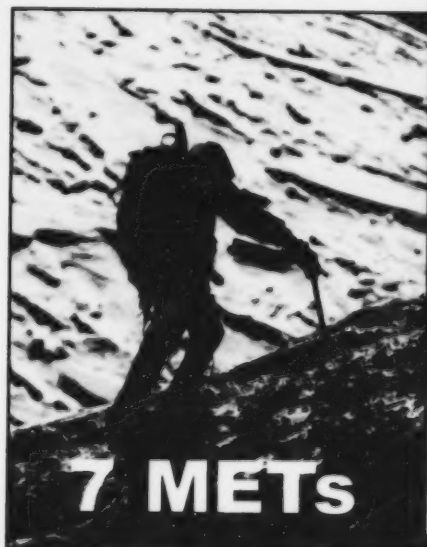
- Sleep [1 MET]
- Light activities [1-3 METs]—Most daily activities, like standing or sitting in class, will fall into this category.
- Moderate Activities [3-5 METs]—This category includes any activity that requires 3 to 5 times resting energy expenditure. A good example is brisk walking at a pace that you would move at if you were in a hurry to get somewhere.
- Strenuous activities [5-7 METs]—These activities are more strenuous than walking and less strenuous than running. A good example is doubles tennis.
- Very strenuous activities [8+ METs]—These activities would be impossible for sedentary and unfit individuals because they cannot sustain very strenuous activities for more than a few minutes without becoming fatigued. Running qualifies for this category.

Follow the instructions to fill out the Energy Expenditure Chart. Think about ways you can change your caloric expenditure in positive ways. Over the next few months, record your progress. You can improve your physical fitness level!

Completing the Energy Expenditure Chart

Please review the next few pages including a sample of a completed energy expenditure chart. The energy expenditure chart allows individuals to calculate the approximate number of calories that they expended in a given period. The sample chart is for a 21.75-hour period from 4 pm the previous day until the time the chart was filled in at 1:15 pm the following day. Note that an average MET score has been provided for each category.

For this exercise, you may wish to have students complete the chart for a full 24-hour period.



(continued)

Introduction to the Energy Expenditure Chart (continued)

Instructions for completing the energy expenditure chart

1. Review Handout 1-6, the sample chart that has been provided as a guide. Notice that Jae Kim in completing the chart had to calculate the number of hours he spent on each category of activity and he needed to know his weight in kilos.
2. Take a blank page and divide it into five sections, one for each of the five categories of activities discussed in the article on METs (Sleep, Light, Moderate, Strenuous, and Very Strenuous)
3. List all of the activities in which you were involved in over the last 24 hours for each of the five categories (Sleep, Light, Moderate, Strenuous, and Very Strenuous) and the approximate number of hours spent on each activity. Refer to the chart CALCULATING YOUR ENERGY EXPENDITURE IN RECREATIONAL, WORK, and SCHOOL, AND HOME PHYSICAL ACTIVITIES USING METs (following page) to help you categorize each activity.
4. Add up all the hours spent for each category fill in the appropriate section of the chart.
5. Complete the calculations for items 1 to 7 of the chart.
6. Calculate your approximate weight in kilograms (1LB = .454 kilos) and fill in line 8 of the chart.
7. Carry out the calculation as directed on line 9 to get an approximation of the calories that you expended over the last 24 hours.

Alternative

A more accurate picture of the total calories expended will be obtained by using the CALCULATING YOUR ENERGY EXPENDITURE IN RECREATIONAL, WORK, SCHOOL, AND HOME PHYSICAL ACTIVITIES USING METs chart, and carrying out calculations that are more detailed. Activities would still be broken down into five categories but instead of an average MET for each category, you would use the specific MET value for each specific activity and the amount of time in hours spent on each specific activity.

Introduction to the Energy Expenditure Chart (continued)

Calculating Your Energy Expenditure in Recreational, Work, School, and Home Physical Activities Using METs (Metabolic Equivalent Task)

1-3 METs	
Standing	1.3
Reading, talking on telephone	1.5
Sitting in class, studying, note taking	1.8
Walking at a slow pace, at 3 kph (in school, office or shopping), easy casual	2.0
Light gardening	2.0
Light office work, light use of hand tools (watch repair or micro-assembly, light assembly/repair), standing, light work (bartending, store clerk, assembling, filing)	2.0
Playing musical instrument	2.0
Walking downstairs	2.5
Walking at an average pace (3.5-4 kph)	2.5
Somewhat heavier gardening or yard work	2.5
Cooking, light housekeeping, shopping	2.5
Pushing stroller with child, walking dog	2.5
Dancing (slow)	2.5
Standing, light/moderate work (assemble/repair heavy parts, welding, auto repair, pack boxes for moving, etc.), patient care (as in nursing), driving heavy tractor, bus, truck	3.0
Washing car or windows, mopping, moderately vigorous playing with children, sweeping outside house, vacuuming, picking fruit or vegetables, scrubbing floors	3.0
Golf, using power cart, bowling, fishing	3.0

- MET values for each activity are approximations; there may be considerable individual variation.
- One MET is the energy expended at rest. Two METs indicates the energy expended is twice that at rest. Three METs is triple the resting energy expenditure, etc. Thus, the METs-per-hour score is a measure of the intensity of a physical activity.

3-5 METs	
Walking on job, 5 kph (one kilometre every 12 minutes), in office, moderate speed, not carrying anything, or carrying only light articles	3.5
Weight lifting, water aerobics	3.5
Golf, not carrying clubs	3.5
Leisurely canoeing or kayaking	3.5
Raking lawn, planting shrubs, weeding garden, heavy yard work or gardening activities	4.0
Masonry, painting, paper hanging, moderately heavy lifting, moderately heavy farm work	4.0
Walking at a very brisk pace (1 k every 10 to 11 minutes)	4.0
Climbing stairs	4.0
Dancing (moderately fast)	4.0
Bicycling 16 kph, leisurely	4.0
Slow swimming	4.5
Golf, carrying clubs	4.5
Walking at a very brisk pace (one k every 10 min)	5.0
Walking downstairs or standing, carrying objects about 11-22 kg	5.0
Digging, spading, vigorous gardening, using heavy power tools, general gardening, mowing lawn (hand mower)	5.0
Painting, carpentry, cleaning gutters, laying carpet, other vigorous activities	5.0

(continued)

Introduction to the Energy Expenditure Chart (continued)

Calculating Your Energy Expenditure in Recreational, Work, School, and Home Physical Activities Using METs (Metabolic Equivalent Task)

Light Activity	METs per Hour of Activity
1-3 METs	
Standing	1.3
Reading, talking on telephone	1.5
Sitting in class, studying, note taking	1.8
Walking at a slow pace, at 3 kph (in school, office or shopping), easy casual	2.0
Light gardening	2.0
Light office work, light use of hand tools (watch repair or micro-assembly, light assembly/repair), standing, light work (bartending, store clerk, assembling, filing)	2.0
Playing musical instrument	2.0
Walking downstairs	2.5
Walking at an average pace (3.5-4 kph)	2.5
Somewhat heavier gardening or yard work	2.5
Cooking, light housekeeping, shopping	2.5
Pushing stroller with child, walking dog	2.5
Dancing (slow)	2.5
Standing, light/moderate work (assemble/repair heavy parts, welding, auto repair, pack boxes for moving, etc.), patient care (as in nursing), driving heavy tractor, bus, truck	3.0
Washing car or windows, mopping, moderately vigorous playing with children, sweeping outside house, vacuuming, picking fruit or vegetables, scrubbing floors	3.0
Golf, using power cart, bowling, fishing	3.0

- MET values for each activity are approximations; there may be considerable individual variation
- One MET is the energy expended at rest. Two METs indicates the energy expended is twice that at rest. Three METs is triple the resting energy expenditure, etc. Thus, the METs-per-hour score is a measure of the intensity of a physical activity

Moderate Activity	METs per Hour of Activity
3-5 METs	
Walking on job, 5 kph (one kilometre every 12 minutes), in office, moderate speed, not carrying anything, or carrying only light articles	3.5
Weight lifting, water aerobics	3.5
Golf, not carrying clubs	3.5
Leisurely canoeing or kayaking	3.5
Raking lawn, planting shrubs, weeding garden, heavy yard work or gardening activities	4.0
Masonry, painting, paper hanging, moderately heavy lifting, moderately heavy farm work	4.0
Walking at a very brisk pace (1 k every 10 to 11 minutes)	4.0
Climbing stairs	4.0
Dancing (moderately fast)	4.0
Bicycling 16 kph, leisurely	4.0
Slow swimming	4.5
Golf, carrying clubs	4.5
Walking at a very brisk pace (one k every 10 min)	5.0
Walking downstairs or standing, carrying objects about 11-22 kg	5.0
Digging, spading, vigorous gardening, using heavy power tools, general gardening, mowing lawn (hand mower)	5.0
Painting, carpentry, cleaning gutters, laying carpet, other vigorous activities	5.0

(continued)

Introduction to the Energy Expenditure Chart (continued)

Calculating Your Energy Expenditure in Recreational, Work, School, and Home Physical Activities Using METs (Metabolic Equivalent Task)

Strenuous Activity	METs per Hour of Activity
5-7 METs	
Chopping wood	5.0
Most doubles tennis, Dancing (more rapid)	5.0
Slow jogging (one km every 9 to 10 min.) Some exercise apparatuses	5.0
Ice-Roller Skating, Doubles Tennis (if you run a lot)	6.0
Loading and unloading truck (standing); moving heavy objects; heavy farming work	6.5
Walking downstairs or standing carrying objects about 22-34 kg	7.5
Hiking	6-7

Very Strenuous Activity	METs per Hour of Activity
8+ METs	
Rowing, canoeing, kayaking vigorously	6-8
Dancing (vigorous)	6-8
Some exercise apparatuses	6-8
Bicycling 16 to 22 kph	6-10
Swimming laps moderately fast to fast	6-10
Aerobic calisthenics	6-10
Singles tennis, squash, racquetball	7-12
Jogging (1 km every 9 min.)	8
Skiing downhill or cross country	8
Running 10 kph (6-minute km)	10
Running 12 kph (5-minute km)	13.5
Running 16 kph (3.75-minute km)	16

Reference

<<http://healthfulife.umdj.edu/archives/METsTbl.htm>

<http://healthfulife.umdj.edu/archives/METsWork.htm>

(Accessed on October 3, 2005.)

Introduction to the Energy Expenditure Chart (continued)

Calculating Your Energy Expenditure in Recreational, Work, School, and Home Physical Activities Using METs (Metabolic Equivalent Task)

5-7 METs	
Chopping wood	5.0
Most doubles tennis; Dancing (more rapid)	5.0
Slow jogging (one km every 9 to 10 min.); Some exercise apparatuses	5.0
Ice-Roller Skating; Doubles Tennis (if you run a lot)	6.0
Loading and unloading truck (standing); moving heavy objects; heavy farming work	6.5
Walking downstairs or standing carrying objects about 22-34 kg	7.5
Hiking	6-7

8+ METs	
Rowing, canoeing, kayaking vigorously	6-8
Dancing (vigorous)	6-8
Some exercise apparatuses	6-8
Bicycling 16 to 22 kph	6-10
Swimming laps moderately fast to fast	6-10
Aerobic calisthenics	6-10
Singles tennis, squash, racquetball	7-12
Jogging (1 km every 9 min.)	8
Skiing downhill or cross country	8
Running 10 kph (6-minute km)	10
Running 12 kph (5-minute km)	13.5
Running 16 kph (3.75-minute km)	16

Reference

<<http://healthfullife.umdj.edu/archives/METsTbl.htm>>

<<http://healthfullife.umdj.edu/archives/METsWork.htm>>

(Accessed on October 3, 2005.)

Energy Expenditure Chart (sample)

Name: Jae Kim

Today's Date: 12/04/03

Energy Expenditure Chart

(1) Activity Type	(2) METS	x	(3) Hours of Activity	=	(4) Caloric Expenditure per kg of weight
1. Sleep	1	x	<u>8</u>	=	<u>8</u>
2. Moderate	4	x	<u>1</u>	=	<u>4</u>
3. Strenuous	6	x	<u>.5</u>	=	<u>3</u>
4. Very Strenuous	10	x	<u>0</u>	=	<u>0</u>
5. Total Hours (sum of hours #1-4)			<u>9.5</u>		
6. Light	1.5	x	<u>*14.5</u>	=	<u>21.75</u>
7. Total calories expended per kg today					<u>36.75</u>
8. Weight in kilograms					<u>58</u>
9. Total calories expended: the product of lines 7 and 8					<u>2,131.5</u>

* This number is derived by subtracting the total on line 5 from the number 24.

(continued)

Energy Expenditure Chart (continued)

Name: _____

Today's Date: _____

Energy Expenditure Chart

(1)	(2)		(3)		(4)
Activity Type	METS	x	Hours of Activity	=	Caloric Expenditure per kg of weight
1. Sleep	1	x	—	=	—
2. Moderate	4	x	—	=	—
3. Strenuous	6	x	—	=	—
4. Very Strenuous	10	x	—	=	—
5. Total Hours (sum of hours #1-4)			—		
6. Light	1.5	x	* —	=	—
7. Total calories expended per kg today					—
8. Weight in kilograms					—
9. Total calories expended: the product of lines 7 and 8					—

* This number is derived by subtracting the total on line 5 from the number 24.

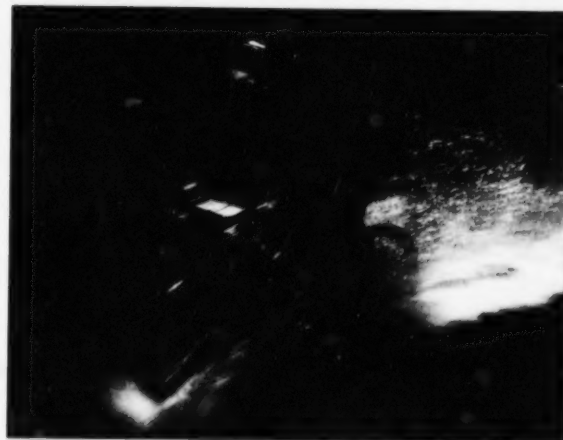
"It's Not So Bad"

The morn was dawning, dull and grey.
I thought I'd take a jog today.
But looking out the window, gee,
My warm, old bed looked good to me!
I thought, then, of my fitness oath.
Fit mind and body—one needs both!
"My body needs this run," I thought.
"I'll even use new shoes I bought!"
Out to the street I finally went.
My feet were pounding the cement.
To my delight, out came the sun.
I thought, "This running might be fun!"
And later on, I felt SO good—
I'm proud of my new attitude!



Twenty-five Ways to Get Moving

1. Put your exercise clothes on when you get up, and don't take them off until you get some exercise.
2. Make a date to do something active with a friend.
3. Ask a friend or family member to give you a call to remind you to exercise.
4. Set your alarm to remind you to take a two-minute walk. Walk for a longer time as you get in better physical condition.
5. Refuse to eat lunch until after you take at least a two-minute walk.
6. Plan some errands for your lunch hour. Bike, inline skate, walk, or run to do them.
7. Take your dog for a walk; he or she also needs exercise. If you train your dog, your dog will remind you to walk.
8. If you don't have a dog, borrow the neighbour's. (Both your neighbour and the dog will be delighted!)
9. Play a pick up game of basketball, soccer, or Ultimate.
10. Take up an active hobby.
11. Enrol in a hip-hop class.
12. Put some music on and dance to hip-hop, swing, or rock and roll.
13. Tune in to an exercise show on TV and learn the moves.
14. Walk around campus during your spares.
15. Walk and talk with your boyfriend or girlfriend every day. There is nothing to interrupt your conversation.
16. Plan short bicycle rides.
17. Learn to inline skate.
18. Walk more briskly on two of your everyday walks.
19. Take a little friend to the zoo.
20. Limit your TV and computer time by 10% and substitute this couch potato activity with some physical activity instead.
21. Take a 10-minute walk before going to bed.
22. Take the stairs instead of taking the elevator.
23. Run instead of walking up the stairs.
24. Get off the bus or subway a few blocks before your stop and walk briskly the rest of the way.
25. Join a gym.

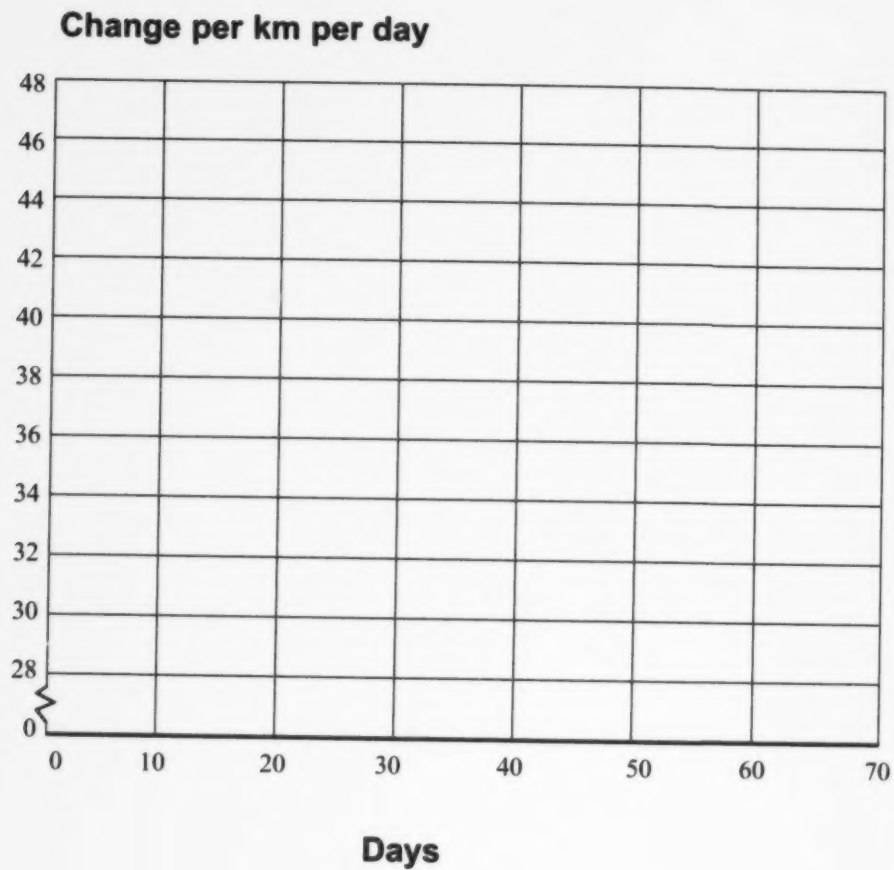




My Very Own Twenty-five Ways to Get Moving—Starting Today!

Make a list of the twenty-five easiest ways for you to add more exercise to your day. You may borrow some of the ideas from the model list. Try to include some activities that are fun for you. It shouldn't be ALL hard work! ☺

1. _____
_____2. _____
_____3. _____
_____4. _____
_____5. _____
_____6. _____
_____7. _____
_____8. _____
_____9. _____
_____10. _____
_____11. _____
_____12. _____
_____13. _____
_____14. _____
_____15. _____
_____16. _____
_____17. _____
_____18. _____
_____19. _____
_____20. _____
_____21. _____
_____22. _____
_____23. _____
_____24. _____
_____25. _____

Chart: Change in Caloric Expenditure





Topic 3A
**The Spirit of the
Olympics**

(1 lesson)

This lesson focuses on the history of the Olympics. Students read an article and take notes on a graphic organizer to create a summary. The main academic language tasks are: skimming, distinguishing main ideas from supporting detail, extracting relevant information, making notes, summarizing, sentence combining, and participating in discussion.

Outcomes

SLO 1.5 examine and interpret various visual media...

SLO 4.2 Communicate effectively to work with others...

SLO 4.6 Respond to and critique a variety of individual perspectives...

SLO 6.2.7 Use elaboration to relate new information...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.3.2 Use co-operation to work together...

Instructional and Learning Sequence

Sequence 1

Activation

Distribute Handout 1-15: "The Olympic Games: A Picture Study."

As a class, students name the sports pictured on the handout. (C) Ask students whether these sports represent the ancient Olympics or both the modern Summer and Winter Olympics.

To activate prior knowledge, students think about what they know about the ancient and modern Olympics. Give students questions to guide them (e.g., What were the ancient Olympics meant to celebrate? Do you know when they started and how they ended? Do you know what sports were included? How did the modern games begin? Who was responsible? Did the Summer and Winter Games begin at the same time in history? Was the purpose the same?).

Students share their thoughts with their classmates and record their ideas on a brainstorming web on the board. (C)

Language Features

Vocabulary

names of Olympic sports, especially ancient Olympics sports, which may not be known to students
names of sports equipment

Academic Language Functions

explaining, describing

Student Learning Tasks

Name the sports pictured in **Handout 1-15: "The Olympic Games: A Picture Study."**

Guided by the teacher's questions, share your thoughts with classmates and record your ideas on the board.

Teacher Notes and References

Handout 1-15: "The Olympic Games: A Picture Study"



Add or adapt any questions as needed.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.4 Show an awareness of organizational patterns...

SLO 1.6 Interpret a range of texts from across the curriculum...

SLO 4.1 Use language to encourage, support, and work with others.

SLO 6.1.5 Use selective attention...

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.1.1 Analyze and edit texts...

SLO 2.1.2 Use standard Canadian spelling...

SLO 4.6 Respond to and critique a variety of individual perspectives...

SLO 6.2.3 Use grouping of items of common characteristics to classify...

SLO 6.2.4 Use note taking to write down key words...

SLO 6.2.9 Use summarization to make a mental or written summary...

Instructional and Learning Sequence

Sequence 2

Refer Students to Appendix 2: "How to Create a Summary." Review with students how to create a good summary of paragraphs, using point-form notes and then creating a few sentences in their own words to summarize each paragraph. Students use Appendix 3: "Skimming and Scanning for Academic Purposes" to help them read. Read over this resource as a class and discuss the techniques suggested, making sure that students understand them. **(C)**

In triads, students skim **Handout 1-16:** "The Spirit of the Olympic Games." Advise students that they will be creating a summary of this article later.

Language Features

Vocabulary

professionalized; exemplified; symmetrical and harmonious development; moral; nobility; nationalist; had charge of; integrity; riddled with controversy; propaganda; commercialism; illegal competitive advantage; performance-enhancing drugs; bribery; favouritism

Structures

note in the assigned reading; reduction through ellipsis; participial phrases; infinitive phrases; relative clauses

In pairs, students review and compare their highlighting, deciding what information is important to include in their summaries. **(P)**

Go over the note taking symbols and encourage students to use them. **(C)** The pairs compare their results, join a second pair, and repeat the process. **(B)**

Language Features

Discourse Features

Discussion expressions/gambits: to agree, to support, to question, to obtain more information, to add information, to disagree, etc.

Note taking: creating phrases, abbreviations, etc.

Distribute Handout 1-17: "Summary Organizer" and have students fill in the graphic organizer.

Student Learning Tasks

Ask questions about how to create a summary.

In triads, discuss and ask questions about skimming and scanning.

• Given **Handout 1-16: "The Spirit of the Olympic Games,"** skim the article as follows:

- Go over key vocabulary.
- Look at the title, subtitles.
- Read the first paragraph.
- Read all the topic sentences and the conclusion.
- Read in-depth, paragraph by paragraph, discussing and helping each other as you go.
- Highlight the parts of the article that you feel summarize it. (■)

Assignment

Using **Handout 1-17: "Summary Organizer,"** work individually to summarize each paragraph in point form (in your own words) in one block of the organizer. Some blocks will have several points, while others may have only one or two.

Teacher Notes and References



Appendix 2: How to Create a Summary

Appendix 3: Skimming and Scanning for Academic Purposes

Handout 1-16: "The Spirit of the Olympic Games"



Tell the students they will be reading an article about the spirit of the Olympics and creating a summary.

Note that "The Spirit of the Olympic Games" does not have a real conclusion. Students will create their own conclusion later.

Some key vocabulary words are mentioned in the Language Features column. These should be dealt with before an in-depth reading. You may want to create a matching exercise or a fill-in-the-blanks exercise to teach these words, or you may have students try to use context to predict their meanings.

You may want to create mini-lessons to review or teach language features, using examples from the article.



Handout 1-17: "Summary Organizer"

Appendix 4: Note-Taking Symbols



For information on gambits, see the "Resources for Building Content-Based Language Lessons" section in Kehe and Kehe (2001), and the References in Keller and Warner (1988).

Outcomes

SLO 2.1.1 Analyze and edit text...

SLO 2.1.2 Use standard Canadian spelling...

SLO 2.1.3 Use developing control of grammatical structures...

SLO 2.3.1 Use the structures and language features...

SLO 2.4 Use the steps in the writing process...

SLO 6.2.9 Use summarization...

SLO 6.2.13 Use recombination...

SLO 2.1.3 Use developing control of grammatical structures...

SLO 2.3.1 Use the structures and language features...

SLO 6.2.11 Use transfer to make a language task easier...

Instructional and Learning Sequence**Writing Task**

Students write a 200- to 250-word summary of **Handout 1-16: "The Spirit of the Olympic Games"** using the "Review Sentence Combinations" graphic organizer.

Language Features**Discourse Features**

sentence combining using adjective, adverb, and prepositional phrases; coordinating conjunctions; appositives; participial phrases; subordination with noun, adjective, and adverbial clauses; semicolons, etc.
organization of paragraphs
structure of a conclusion

Sequence 3**Roundup**

Consider using one or more of the following Roundup activities.

1. Review with students the learning strategies used in Lesson 3A. Students describe which strategy was most helpful and when and where they used it. Ask them where it would be helpful in other assignments. (C)
2. Review vocabulary words by using them in sentences. (C)
3. Review reduction by having students pick three sentences from the article and change them through reduction. (C)

Student Learning Tasks**Assignment**

- Create a short summary of 250 words from the points on your graphic organizers,
 - combining at least three of the sentences in your summaries
 - writing a proper conclusion to the article
 - using the writing process (I)

1. Orally describe which strategy was most helpful, when and where you used it, and where it would be helpful in other assignments.
2. Choose five new vocabulary words from this lesson, and use each in a proper sentence showing the meaning of the word. (I)
3. Practise reduction by picking three sentences from the article and changing them through reduction. (I)

Assessment

Observe and note students' level of control and selection of strategies, specific vocabulary, and/or reductions highlighted in this topic.

Teacher Notes and References**Mini-lessons**

Go over sentence-combining techniques and review writing conclusions.



Remember to refer explicitly to one or two useful strategies during the lesson. In this lesson, note taking and summarizing are especially important. You may also wish to discuss the use of graphic organizers (imagery).





The Spirit of the Olympic Games

The Ancient Olympics

Although records cannot verify Olympic Games earlier than 776 BCE, Homer's *Iliad* tells of such contests at the Funeral of Patroclus, held during the Trojan War, about three to four hundred years earlier. The ancient Greek games were held at Olympia every fourth summer in Ancient Greece. They reached their height in the fifth to fourth century, BCE. They became more and more professionalized until, in the Roman period, they provoked much censure. They were eventually discontinued by Emperor Theodosius I of Rome at the end of the fourth century CE.

Among Greeks, the Games exemplified their attitude towards excellence in all things. Competition was an important part of Greek life and was a major motivational factor for the institution of the Games. Another basic Greek ideal, the striving for symmetrical and harmonious development of physical beauty, moral character, nobility of spirit and conduct, and intelligence, supported the Games. The Games, too, were nationalist in spirit; states were said to have been prouder of Olympic victories than of battles won. Women, foreigners, slaves, and dishonoured people were forbidden to compete. Contestants were required to train for ten months before the Games, had to remain thirty days under the eyes of officials in Elis who had charge of the Games, and had to take an oath that they had fulfilled the training requirements before participating. They also had to vow to conduct themselves with honour and integrity. At first, the Olympic Games were confined to running, but over time new events were added: the long run (720 BCE), when the loincloth was abandoned and athletes began competing naked; the pentathlon (708 BCE); boxing (688 BCE); chariot racing (680 BCE); the pancratium (648 BCE), involving boxing and wrestling for boys (632 BCE); and the foot race with armour (580 BCE).

Greek women, who were not even allowed to watch the Games, held their own Games, called the Heraea, starting as early as the sixth century BCE. They were also conducted every four years but with fewer events. These Games were discontinued about the time the Romans conquered Greece.

The Beginning of the Modern Olympics

On April 6, 1896, in Athens, Greece at the Panathenean Stadium, the International Games were opened. This was the dream of Baron Pierre de Coubertin of France. The program included track and field, fencing, weightlifting, rifle and pistol shooting, tennis, cycling, swimming, gymnastics, wrestling, and the first modern-day marathon. Although 14 nations participated; most of the athletes were Greek. Pleased with the success of the event, de Coubertin stressed to organizers the importance of moving the Games all around the world: thus, the modern Summer Olympic Games became a reality.

The Winter Olympics

It was not until 1924 that the International Committee sanctioned an "International Winter Sports Week" at Chamonix, France. The eleven-day event included Nordic skiing, speed skating, figure skating, ice hockey, and bobsledding; it was a huge success. The Winter Olympics were born.

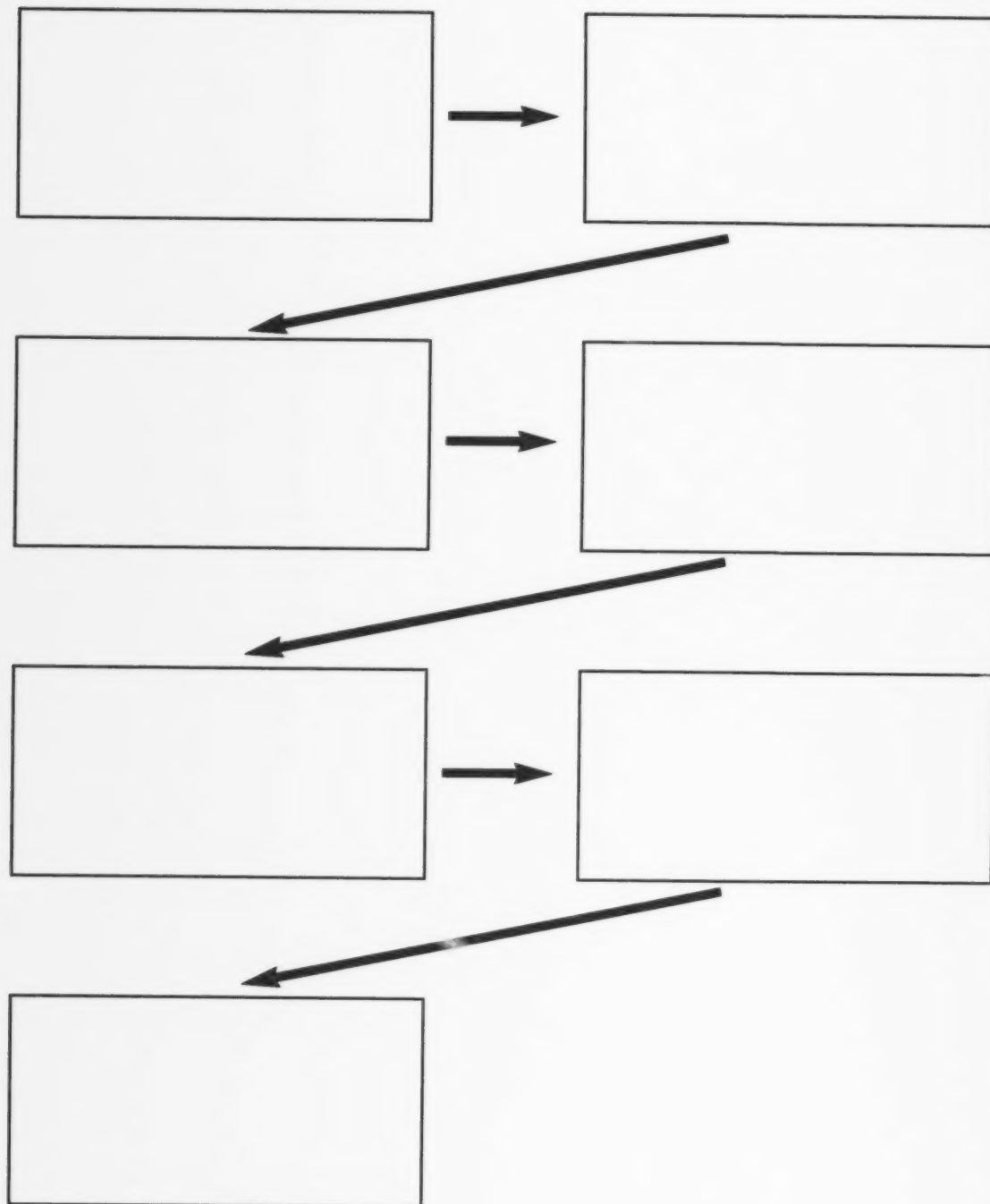
Today

Today, the Winter and Summer Games alternate every two years. Over time, these Games have been riddled with controversy that has thwarted their ideals of world co-operation and athletic excellence. Between 1952 and 1988, the rivalry between the United States and the former Soviet Union resulted in each country's boycotting the Games hosted by the other country.

Political ideals have interfered with the Games in other ways, from the propaganda of the Nazis in Berlin (1936) to the exclusion of white-ruled Rhodesia from the Munich Games (1972). At Munich, nine Israeli athletes were kidnapped and murdered by Palestinian terrorists. Furthermore, the International Olympic Committee has struggled with the licensing and commercialism of the Games, the need to schedule the Games to accommodate American television networks, and the monitoring of athletes who seek illegal competitive advantage, often through the use of performance-enhancing drugs. In 1998, a scandal erupted with the revelations that bribery and favouritism had played a role in the awarding of the 2002 Games to Salt Lake City, Utah. Scandals in judging of various sporting events, especially figure skating, continue to mar the Games. Where will it all end?



Summary Organizer







Topic 3B
**Swifter, Higher,
Stronger?**

(1 lesson)

This lesson focuses on the oath, motto, and creed of the Olympics, and examines history to see if these values were adhered to, even in ancient times. The main academic tasks are: defining terms, drawing conclusions, participating in discussion,

following instructions, note taking, listening to extract relevant points, adding filler words to a point-form outline, creating a written essay from point-form notes, and writing a conclusion.

Outcomes	Instructional and Learning Sequence		
SLO 1.4 Show an awareness of organizational patterns... SLO 2.3 Produce a variety of short and extended text forms necessary for subject-area tasks... SLO 4.1 Use language to encourage, support... SLO 6.2.11 Use transfer to make a language task easier...	Sequence 1 Activation Ask students to consider the title of this lesson. Ask them why it is followed by a question mark, and what the question mark suggests will be the focus of the lesson to follow. Distribute Handout 1-18: "Motto, Creed, Oath." Ask students the meaning of the terms in the handout title. (C) In their triad groups, students develop definitions and match words with correct terms, using the transfer strategy. (B) Share the results as a class. (C) <table border="1"> <thead> <tr> <th>Language Features</th> <th> Pronunciation Sounds: str, final s, th, r, l, gl, tr, ed linkage Discourse Features A solemn, formal declaration or promise is referred to as an oath. A brief statement used to express a principle, goal, or ideal is known as a motto. A formal statement of belief is called a creed. Discussion expressions: Offering opinion: I think...; I have an idea... Agreement: I agree with you...; that's right...; good idea... Disagreement: I'm sure I agree...; I have a problem with that... Interruption: Could I say something...; excuse me, but... Questioning for clarification: What do you mean by... Could you explain...; etc. </th> </tr> </thead> </table>	Language Features	Pronunciation Sounds: str, final s, th, r, l, gl, tr, ed linkage Discourse Features A solemn, formal declaration or promise is referred to as an oath. A brief statement used to express a principle, goal, or ideal is known as a motto. A formal statement of belief is called a creed. Discussion expressions: Offering opinion: I think...; I have an idea... Agreement: I agree with you...; that's right...; good idea... Disagreement: I'm sure I agree...; I have a problem with that... Interruption: Could I say something...; excuse me, but... Questioning for clarification: What do you mean by... Could you explain...; etc.
Language Features	Pronunciation Sounds: str, final s, th, r, l, gl, tr, ed linkage Discourse Features A solemn, formal declaration or promise is referred to as an oath. A brief statement used to express a principle, goal, or ideal is known as a motto. A formal statement of belief is called a creed. Discussion expressions: Offering opinion: I think...; I have an idea... Agreement: I agree with you...; that's right...; good idea... Disagreement: I'm sure I agree...; I have a problem with that... Interruption: Could I say something...; excuse me, but... Questioning for clarification: What do you mean by... Could you explain...; etc.		

Student Learning Tasks

In triad groups, read one of the expressions/sentences in **Handout 1-18: "Motto, Creed, Oath"** out loud and come up with an agreed-upon set of definitions. Then work to match the words with the correct terms, using the transfer strategy. (E)

In triads, share your results with the class.

Teacher Notes and References**Handout 1-18: "Motto, Creed, Oath"**

Try starting with a word students already know. For example, they might know "motto" because of school or club mottos. They might also know "creed." Ask students if they know any more words from this word family. Help them if they really don't know by suggesting words like credible, credence, incredible, et cetera. They may be able to connect the word "creed" with belief. If this doesn't work, they can start with the definitions given in the Language Features column, or they can look them up. After the matching is complete, you might want to discuss how "swifter, higher, stronger" is the accepted motto, but is not a direct translation from the original Latin (i.e., *citius* = faster; *altius* = higher; *fortius* = braver).

Encourage students to practise different definition patterns introduced in previous lessons.

Outcomes

SLO 1.3 Develop and express a personal position...

SLO 1.2 Respond to texts with increasing independence.

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.2 Use several visual techniques...

SLO 6.1.2 Use organizational planning to choose good organizational strategies...

SLO 6.2.12 Use inferencing to guess the meanings...

Instructional and Learning Sequence

Sequence 2

Discuss with students the ideals of the ancient Olympics. Have them recall these from the "Spirit of the Olympics" lesson. The modern Olympic Games were established to work toward a more peaceful world, bringing countries together through sport. Students discuss how they feel "motto, creed, and oath" apply to the Games today. How do they think they applied to the ancient Olympic Games? (This can be done in small groups or as a class.) (B) or (C)

Language Features

Discourse Features

Discussion expressions:

To state opinion: I think...; I believe...

To agree: That's right...; absolutely...; You're right...; exactly...

To disagree: I don't think so...; I don't see that...; I can't agree with you...

To add information: Another thing...; another idea...; also...; not only that...

To question: What do you mean...; I don't get it...; Can you explain that again...; I'm not sure I understand your point...; etc.

Step 1. Tell the students they will be doing a listening and note taking activity. Read **Handout 1-19: "Olympic Roots"** aloud to the class. The article is based on the economic and political roots of the ancient Olympic Games. The T-List is written in point form with blanks to be filled in while students listen to the reading. Before beginning to read, preview the T-List and the procedures with students, making sure they understand what they are to do. Direct students' attention to Appendix 4: Note-Taking Symbols, used in the T-List. Students try to predict what types of words (parts of speech) will go in the blanks. (C)

Language Features

Structures

Parts of speech

Discourse Features

Expressions to indicate opinion

Note-taking symbols and abbreviations: ~, &, N.B., w/, @

Student Learning Tasks

Recall the ideals of the ancient Olympics from the "Spirit of the Olympics" lesson)—Topic 3A.

Discuss how you think the terms "motto, creed, and oath" apply to the Games today and how they applied to the ancient Olympic Games.

Review **Appendix 5:** T-List Procedures, and ask questions about the procedures.

Review **Appendix 4:** Note-Taking Symbols, and ask questions.

Predict what types of words will go in the blanks.

Teacher Notes and References

Handout 1-19: "Olympic Roots" (for the teacher only)

Handout 1-20: "T-List for 'Olympic Roots'"

Appendix 4: Note-Taking Symbols

Appendix 5: T-List Procedures



Some words in the reading are underlined, either because they are answers or because they may be unfamiliar. You can pre-teach some of this vocabulary.

This T-List is a technique from the Foresee approach, and is different from the T-Chart referred to in the graphic organizer section of the Introduction.

Outcomes

SLO 6.1.3 Use directed attention...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check, verify...

SLO 2.2 Use several visual techniques...

SLO 1.2 Respond to texts with increasing independence.

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.3 Produce a variety of...text forms...

SLO 2.1.1 Analyze and edit texts...

SLO 2.1.2 Use standard Canadian spelling...

SLO 2.2 Use several visual techniques...

SLO 2.3 Produce a variety of...text forms...

SLO 2.3.1 Use the structures and language features...

SLO 6.2.11 Use transfer to make a language easier...

SLO 6.2.13 Use recombination...

Instructional and Learning Sequence

Read **Handout 1-19**: "Olympic Roots" article slowly as students fill in the blanks. Check for comprehension. If necessary, read the article once more at normal speed.

As a class, students contribute answers to complete the T-List on a master form on an overhead. For visual clarity, write the answers in a different-coloured marker than the T-List itself. (C)

Language Features

Discourse Features

expressions for discussion

Once students have completed **Handout 1-20**: "T-List for 'Olympic Roots,'" discuss how to change the point-form notes into proper sentences by adding filler words, phrases, and punctuation, and by sentence combining. Using a different-coloured marker, accept a variety of answers from the students and record them on the master T-chart. Encourage students to think of different ways to create the sentences. (C) Encourage sentence combining.

Language Features

Structures

definite and indefinite articles; capitalization and punctuation: commas, semicolons, periods; past tense

Discourse Features

Discourse markers: however, although, while, therefore

Introductory phrases: in fact, as a result

coordinating conjunctions, subordinating conjunctions

Student Learning Tasks

Take notes on **Handout 1-20**: "T-List for 'Olympic Roots,'" which is a graphic organizer with the main points on the left and details and supporting points on the right.

Individually, complete Handout 1-20: "T-List for 'Olympic Roots.'"

In pairs, compare your answers. (P)

Give suggestions for changing the point-form notes into proper sentences by adding filler words, phrases, and punctuation, and by sentence combining.

Add ideas generated by the class to your own T-Lists. (I)

Teacher Notes and References



Handout 1-19: "Olympic Roots" (for the teacher only)

Handout 1-20: "T-List for 'Olympic Roots'"



Handout 1-21: "Filled-in T-List for Olympic Roots" (Teacher Reference)



Handout 1-22: Final T-List for "Olympic Roots" (Teacher Reference)



There will be a number of grammar structures on which you may want to focus, depending on the needs of students. The use of articles and appropriate punctuation are two areas of focus. Also, discuss all combining forms for the required sentence combining.

Outcomes

SLO 1.2 Respond to texts with increasing independence.

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.1.1 Analyze and edit texts...

SLO 2.1.2 Use standard Canadian spelling...

SLO 2.4 Use the steps in the writing process...

SLO 6.1.2 Use organizational planning...

SLO 6.2.13 Use recombination...

Instructional and Learning Sequence**Sequence 3****Writing Task**

Students use their T-List notes to create their own version of the article that was read to them. They must add a conclusion. Students must use sentence combining a minimum of three times. The essay will likely have five short body paragraphs.

Language Features**Discourse Features**

article format

paragraph construction

Student Learning Tasks**Assignment**

Write a five-paragraph essay based on **Handout 1-19:** "Olympic Roots," using your T-List notes. Write a conclusion and use sentence combining a minimum of three times.

Teacher Notes and References

developed)

Rubric for assessing the discourse features that are the focus of this activity (teacher-



Check for correct paragraph usage.



Motto, Creed, Oath

1. **Swifter, Higher, Stronger**
2. "In the names of all competitors, I promise that we will take part in these Olympic Games, respecting and abiding by the rules which govern them, in the true spirit of sportsmanship, for the glory of sport and the honour of our teams."
3. **"The most important thing in the Olympic Games is not to win but to take part, just as the most important thing in life is not the triumph, but the struggle. The essential thing is not to have conquered but to have fought well."**

Creed

Oath

Motto



Olympic Roots: The Olympics Draw on Traditions of War, Religion, and Ceremony

Introduction

Physical competitions and contests, like the Olympics, are as old as the hills, but what about the scandals associated with them? Olympic skullduggery is nothing new. The ancient Olympics were plagued by numerous scandals. Records show the Games were connected with commercialism and greed, nationalistic pride, and political strife and competition that sometimes led to war.

The Ancient Games Were Commercial

Today, winning an Olympic medal is a financial windfall of endorsements. Records suggest this was also common practice at the ancient Olympics. Although the accepted prize was an olive wreath, athletes competed for other perks, as well. Winners might pocket as much as 500 drachmas, which would make them millionaires today. Athletes were often offered free theatre seats or free meals at city hall for life—no small rewards, indeed!

The Games Instilled Nationalistic Pride

Competition between city-states to produce Olympic winners was fierce and often led to bribery and cheating. Astylos, a sprinter from the city-state of Kroton, competed and won in 488, 484, and 480 BCE. However, in his last race, he was bribed by a powerful tyrant from the city-state of Syracuse to change allegiance so his win would be attributed to that city.

City-states took immense pride in their winners. Sculptors were commissioned to create statues of the victors in their home city-states. The images were idealistic. Only if an athlete was victorious three times could a realistic image of him be erected in the Sanctuary of Zeus.

Cheating brought great shame to the athletes and their city-states. Although statutes warning athletes against cheating lined the road to the stadium, cheating, and bribery were common. In lieu of statues of winners, sometimes statues of Zeus, with written apologies in stone, were erected along the road from the altis to the stadion, the path the athletes took before they

competed, to make an example of cheaters and to discourage others from cheating. Cheaters were sometimes punished by being castrated.

The Ancient Olympics Were Political and Often Caused War

Not only were the ancient Olympics athletic competitions, they were also political events. The city-state hosting the Games gained prestige, as well as economic and political advantages. The Games were immensely popular, and cities vied for the honour of hosting them. Sometimes citizens actually went to war over them. In 668 BCE, according to Pausanias, a Greek traveller, Pheidon, a powerful tyrant from Argos, was hired by the town of Pisa to capture the Sanctuary of Zeus from the city-state of Elis in order to gain control of the Games. This victory was short-lived, and Elis regained control of the Games the next year. Later, in 364 BCE, another military incident occurred. Elis had again lost control of the Games to Pisa. While Pisa was hosting the Games, Elis attacked the Sanctuary of Zeus. According to Xenophon, a fourth-century historian, the Eleans chose to attack just as the wrestling event was taking place between the dromos and the altar. A day-long battle commenced in which thousands of soldiers were involved.

Conclusion

(Students will add this.)

Facts from:

<http://museum.upenn.edu/new/Olympics_rev.olympicpolitics.shtml>

<www.museum.upenn.edu/new/Olympics_rev/olympiccommercialism.shtml>

<<http://corinth.sas.upenn.edu/dgr/otherclips.ancgames.html>>

<www.upennmuseum.com/pressreleases/forum.pl?msg=35>



**T-List for "Olympic Roots:
The Olympics Draw on Traditions of War, Religion, and Ceremony"**

Main Ideas**I. Introduction****Supporting Details**

- physical competitions & _____
old as _____
- Olympic _____ nothing _____
- Ancient Olympics _____ by _____
- Ancient Olympics connected w/:
 - a) _____ & greed
 - b) _____ pride
 - c) political _____ & competition - →

II. Games -

- accepted prize- _____
- competed for other _____
- might _____ drachmas - make
_____ today
- offered free _____ &
_____ @ _____ hall - _____

III. Games Instilled

- competition btw. _____ fierce - →
_____ and cheating
- _____ - sprinter - _____
won _____, _____, _____ B.C.
- last race - _____ by _____ -
_____ to change
_____ - win _____ - that
city
- city-state - _____ pride - winners
_____ commissioned - statues of
_____ in home _____
- Images - _____
- only _____ if athlete _____ X
_____ - then statue in _____ - Zeus

(continued)

Note: A full-colour version of this handout is available at the
Manitoba Education, Citizenship and Youth website at:
<www.edu.gov.mb.ca/ks4/cur/diversity/eal>

**T-List for "Olympic Roots:
The Olympics Draw on Traditions of War, Religion, and Ceremony" (continued)**

IV. A.O.- _____
& Caused _____

- _____ - great _____
- _____ warned athletes - _____ &
cheating common
- statues - Zeus w/ written _____ on
_____ from altis → _____
- make _____
- cheaters' punishment - _____

- were _____ events
- host - _____ + _____ &
political advantages
- Games - _____ - _____ for honour
of _____
- Wars:

a) according to _____:
In _____, B.C., Pheidon - tyrant from
_____ - hired by _____
- capture sanctuary _____ - control
Games - _____ short-lived -
_____ - control next
year

b) according to _____:
In _____ B.C., _____ lost control
to _____
- _____ Games - Elis _____
Sanctuary - Zeus - when _____
event taking place btwn. _____ &
altar - day long battle _____
soldiers

V. Conclusion

**Filled-in T-List for "Olympic Roots:
The Olympics Draw on Traditions of War, Religion, and Ceremony"
(Teacher Reference)**

Main Ideas**I. Introduction****Supporting Details**

- physical competitions & contests
- old as hills
- Olympic skullduggery nothing new
- Ancient Olympics plagued by scandals
- Ancient Olympics connected w/:
 - a) commercialism & greed
 - b) nationalistic pride
 - c) political strife & competition - → war

II. Games -Commercial

- accepted prize- olive wreath
- competed for other perks
- might pick 500 drachmas - make millionaires today
- offered free theatre seats & meals @ city hall - life

III. Games InstilledNationalistic
Pride

- competition btw. city-states fierce - → bribery and cheating
- Astylos - sprinter - Kroton won 488, 484, 480 B.C.
- last race - bribed by tyrant - Syracuse to change allegiance - win attributed - that city
- city-state - immense pride - winners sculptors commissioned - statues of victors in home city-state
- Images - idealistic
- only realistic if athlete Victorious x 3 - then statue in Sanctuary - Zeus

(continued)

Note: A full-colour version of this handout is available at the Manitoba Education, Citizenship and Youth website at:
<www.edu.gov.mb.ca/ks4/cur/diversity/eal>

Filled-in T-List for "Olympic Roots:
The Olympics Draw on Traditions of War, Religion, and Ceremony"
(Teacher Reference) (continued)

IV. A.O. - Political
& Caused War

- Cheating - great Shame
- statutes warned athletes - bribery & cheating common
- statues - Zeus w/ written apologies on them from altis → stadion
- make example
- cheaters' punishment - castration
- were political events
- host - prestige + economic & political advantages
- Games - popular - vied for honour of hosting
- Wars:
 - a) according to Pausanias:
In 668 B.C., Pheidon - tyrant from Argos - hired by Pisa
- capture sanctuary - Elis - control Games - victory short-lived - Elis - control next year
 - b) according to Xenophon:
In 364 B.C., Elis lost control to Pisa
during Games - Elis attacked Sanctuary - Zeus - when wrestling event taking place btwn. dromos & altar - day long battle - thousands soldiers

V. Conclusion

**Final T-List for "Olympic Roots:
The Olympics Draw on Traditions of War, Religion, and Ceremony"
(Teacher Reference)**

Main Ideas**I. Introduction****Supporting Details**

- and
- physical competitions & contests
are as old as hills. (Therefore), (and)
- Olympic skulduggery is nothing new.
The Ancient Olympics plagued by scandals.
It seems (Records show) Ancient Olympics connected w/ with
a) commercialism and greed,
b) nationalistic pride, and (even)
c) political strife & competition - → that (sometimes) led to war

The Ancient**II. Games - were**

Commercial - Although the accepted prize- olive wreath,
athletes competed for other perks, too (as well) (also).
Some winners (victors) - might pocket as much as 500 drachmas - make them millionaires in today's world.
They were also offered free theatre seats and meals at city hall for life. Apparently

III. Games Instilled**Nationalistic****Pride**

the olive wreath was only the beginning for victorious athletes.
- Competition ^{between the} city-states fierce - → bribery and cheating were common. An example
is - Astylos, a sprinter ^{from} Kroton (who)
He won 488, 484 and 480 B.C.
In his last (final) race - Astylos was bribed by a tyrant - from Syracuse to change his allegiance - win attributed - that city instead of to Kroton.
Each city-state - immense pride - winners in its sculptors were commissioned to create (sculpt) (make) statues of the victors in their home city-states.
The The images, ^{though were} idealistic.
They could only be realistic if athlete victorious ^{was} 3 - Then statue in the Sanctuary of Zeus. ^{three times} X (had three victories)
^{this realistic}

Note: A full-colour version of this handout is available at the Manitoba Education, Citizenship and Youth website at:
<www.edu.gov.mb.ca/ks4/cur/diversity/eal>

**Final T-List for "Olympic Roots:
The Olympics Draw on Traditions of War, Religion, and Ceremony"
(Teacher Reference) (continued)**

- (Although) ^{Even though} ~~despite the fact that~~ Cheating ^{brought} - great shame to both athletes and their city states.
- ^{statues} ~~statues~~ ^{were} ~~were~~ ^{erected} ~~erected~~ ^{on} ~~on~~ ^{the path taken by} ~~the path taken by~~ ^{athletes} ~~athletes ^{to the} ~~to the ^{stadium} ~~stadium~~ ^{on the path taken by} ~~on the path taken by~~ ^{athletes} ~~athletes~~~~~~
- Sometimes - statues - Zeus w/ written apologies on them ^{were} ~~were~~ ^{erected} ~~erected ^{on} ~~on~~ ^{the path taken by} ~~the path taken by~~ ^{athletes} ~~athletes~~ ^{to the} ~~to the ^{stadium} ~~stadium~~ ^{on the path taken by} ~~on the path taken by~~ ^{athletes} ~~athletes~~~~~~
- to - make example of cheaters.
- cheaters' punishment castration.
- A terrible punishment for cheaters was
- IV. A.O. - Political ^{The Ancient Olympics} ~~were also~~ political events at which (through which)
- & Caused War ^{the host city} ~~the host~~ ^{city} ~~city ^{prestige} ~~prestige~~ ^{economic} ~~economic~~ & and~~
- political advantages.
- Consequently, the Games ^{were} ~~were~~ ^{popular} ~~popular and vied for honour of hosting them.~~
- Wars: often occurred because city-states were fighting over the games
- a) according to Pausanias: (a Greek traveller),
- i In 668 B.C., Pheidon - tyrant from Argos was hired by Pisa ^{city-state of} ~~city-state of~~
- to - capture sanctuary Elis ^{and} ~~and~~ ^{get} ~~get control of~~
- the Games, Victory ^{was} ~~was~~ ^{short-lived} ~~short-lived~~, and
- Elis ^{regained} ~~regained~~ ^{control} ~~control~~ next
- year.
- b) according to Xenophon: ^{a historian,} ~~a historian,~~ once again
- in In 364 B.C., Elis lost control of the Games to Pisa.
- In order to regain ^{control,} ~~control,~~ - during ^{the} ~~the Games - Elis attacked the~~
- Sanctuary - Zeus ^{last} ~~last when ^{that} ~~that wrestling~~~~
- event ^{was} ~~was ^{taking place between} ~~taking place between Dromos and~~~~
- the altar. ^A ~~A~~ ^{day-long battle} ~~day-long battle~~ ^{thousands} ~~thousands~~ ^{of soldiers} ~~of soldiers~~

V. Conclusion



Topic 4

**Faster, Higher,
Better?**

(2–3 lessons)

This lesson focuses on the use of science to improve sport performance.

Students will use the placemat and jigsaw techniques to develop group discussion skills, take notes and write summaries using two types of graphic organizers, and work with graphs, charts, and definition patterns.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.7 Use elaboration...

SLO 6.2.12 Use inferencing to guess the meanings...

Instructional and Learning Sequence

Sequence 1

Activation

Using visuals, elicit student opinion on the most exciting Olympic sports to watch.

Ask students: What is the Olympic motto? ("Swifter, higher, stronger") What do many athletes hope to do? (set a world record or Olympic record) Why do athletes want to be the best? Do you know of any current world records or the people who hold them? (C)

Language Features

Vocabulary

set, world record

Sequence 2

Distribute **Handout 1-23: "Olympic Games—Some Track and Field Records"** and introduce the graphing assignment.

Assignment

Students choose a sport and, using a website or teacher-provided lists of Olympic results obtained from the Centre for Innovation in Mathematics Teaching (see Teacher Notes and References column), compare the records for the last 100 years. Students make a graph of year and record (time, distance, speed, et cetera), using standard terminology: years on the horizontal (x) axis, records on the vertical axis (y). Students choose a scale that is appropriate to the data, and note the trends in performance. (I) or (P)

Review the graphing language from Topic 2.

Language Features

Vocabulary

plot, x-axis, y-axis, horizontal, vertical, independent variable, dependent variable, statistics, data, trends

Student Learning Tasks**Teacher Notes and References****Assignment**

Choose a sport and, using a website or lists of Olympic results, compare the records for the last 100 years. Make a graph of year and record (time, distance, speed, et cetera), using standard terminology: years on the horizontal (x) axis, records on the vertical axis (y). Choose a scale that is appropriate to the data, and note the trends in performance. (I) or (P)

**• Handout 1-23: "Olympic Games—Some Track and Field Records"**

- Visuals of runners (Donovan Bailey), cyclists, speed skaters, pole vaulters
The International Association of Athletics Federation's website and Canadian Olympic Committee website are good sources. See <www.iaaf.org> or <www.olympic.ca>.
Note: The Centre for Innovation in Mathematics Teaching (CIMT) provides "Data sets" of "World Athletics Records" and "Olympic Games Results." See <www.cimt.plymouth.ac.uk/resources/data/default/htm>.

Handout 1-23 is an example of one of the lists available on the site. If students do not have Internet access, you will need to provide them with reference materials. CIMT provides results for Olympic Games from 1896 to 2000.

Results for the 2004 Athens Games and other Olympic Games may be obtained from the International Association of Athletics Federation (IAAF) site at <www.iaaf.org/index.html>. This site is also excellent for downloading pictures of athletics.

Outcomes

SLO 4.1 Use language to encourage...

SLO 6.1.5 Use selective attention...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.9 Use summarization...

SLO 6.3.1 Use questioning for clarification...

Instructional and Learning Sequence

Introduce the placemat technique and the learning task (see Teacher Notes and References). Give students patterns for stating their opinions about the trend toward better performance. What are the causes?

(Practise patterns with exercise, if needed.)

The groups will likely suggest improvements in equipment have been a major factor. Introduce the idea of sports and technology. How does technology help sports? Is this a good thing?

Language Features

Discourse Features

Statements: In my opinion...; It seems to me...; I feel...; Don't you think that...; According to...; etc.

Agreements: I agree...; That's right/true...; That's a good point...; etc.

Disagreements: I disagree, I don't agree...; I'm not sure I agree...; Maybe/perhaps, but...; etc.

Student Learning Tasks

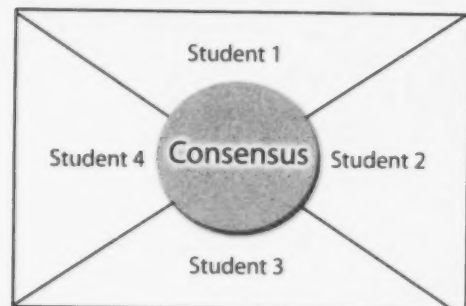
Use the placemat technique to share your results with three or four peers. (5)

Teacher Notes and References

Placemat Technique: Students sit around a sheet of newsprint or other large piece of paper.

Draw a circle in the middle, and divide the rest of the paper into sections for each team member. Inform the students that one person from each group will be randomly chosen to report to the class on the group work. Students write their own findings in their section (timed) without discussion. Then each student silently reads what he or she has written. Students then decide among themselves what they will put in the middle as their group conclusions.

One student is chosen at random to record the discussion. After all the groups have completed the task, one more student will be randomly chosen to report to the class.



Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.2 Use several visual techniques...

SLO 3.2 Develop and implement a plan for researching...

SLO 6.1.1 Use advance organization...

SLO 6.1.5 Use selective attention...

SLO 6.2.12 Use inferencing to guess...

SLO 6.2.4 Use note taking...

Instructional and Learning Sequence

Distribute the article "Wonder Shoes to Smash Olympic Records" on sports technology. Have students look at the title and accompanying photographs to predict what it will be about.

Discuss the different types of shoes worn in sports. How do they differ? How can technology help an athlete's footwear?

Read the first two paragraphs together. Ask students to underline words they don't know. Write the words on the blackboard. Determine which words prevent the students from understanding the main ideas. These are the words students should focus on. (C)

Read through the rest of the article, marking words in the same manner. At the end, ask students to make a list of 10 to 12 of these words for personal study.

Ask students to share a few of their words. Demonstrate how an approximate meaning can sometimes be determined from the context of the word (e.g., the word "colleagues" often follows the names of two people who work together). Guessing from context may not give you a precise meaning, but it is often enough to keep the idea going.

Use the dictionary or discuss as a class the remaining words on the list. Have students add the list of words to their personal dictionary.

Read the article a second time, and use **Handout 1-24: "Reading a Science News Article Frame"** to take notes. Project a model on the overhead, and involve students in the process.

Review the questions students formulated before the first reading. How many have been answered? (C)

Language Features

Vocabulary

revolutionary, smash, state of the art, energy-sapping (note the formation of compound words), vibration, chop, boost, viscosity, elasticity, pendulum, blend, wear and tear, launch

Words from the Academic Word List: emerge, conserve, suit, alter, resonate, adapt, manipulate, boost, frequency, ideally, blend, conventional

Discourse Features

comparison/contrast structures

Student Learning Tasks

Formulate several questions that you expect the article to answer (e.g., Why are these shoes called “wonder shoes?”).

As the teacher reads, underline the words you don’t know (and do not look them up).

Follow along, marking words you do not know as the teacher reads through the article.

Make a list of 10 to 12 of these words for study and compare lists with a partner. (I) (P)

Share a few of your words.

Guess the meaning of words on your list using context as demonstrated by the teacher.

Use a dictionary or define words after class discussion and add words to your personal dictionaries.

Follow along as the teacher reads **Handout 1-24**: “Reading a Science News Article Frame” a second time and make notes. Contribute ideas to note taking.

Complete the notes modelled for you by the teacher.

Review the questions you formulated before reading, to make sure they have all been answered.

Teacher Notes and References



“Wonder Shoes to Smash Olympic Records,” available at

<<http://news.bbc.co.uk/1/hi/world/americas/873649.stm>> or another similar article.



If you use an alternative article, you will need to adjust the learning task content accordingly.



Handout 1-24: “Reading a Science News Article Frame”

Suggested Reading

A short article on sports technology (See *Scientific American*, November 2000 or May 2000, or search the Internet.)



A number of helpful tutorials for finding and evaluating information on the Internet are available from the Winnipeg

Public Library at:

<<http://wpl.winnipeg.ca/library/onlineresources/internet/getstarted.asp>>.

Outcomes

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 6.2.9 Use summarization...

SLO 6.2.11 Use transfer...

Instructional and Learning Sequence**Sequence 3****Writing an Abstract**

Discuss the use of "abstracts" to convey the essentials of long articles. Model how to write an abstract before students begin to work out writing their own abstracts.

Assignment

Students write a one-paragraph abstract of "Wonder Shoes to Smash Olympic Records" using their notes from **Handout 1-24: "Reading a Science News Article Frame."** Students share with a partner. **(I) (P)**

Language Features**Discourse Features**

summary paragraph construction

Student Learning Tasks**Teacher Notes and References****Assignment**

Write a one-paragraph abstract of "Wonder Shoes to Smash Olympic Records" using your notes from **Handout 1-24: "Reading a Science News Article Frame."** Share with a partner.
(I) (P)



- **Appendix 2:** How to Create a Summary

• You may wish to provide examples of abstracts from journals or websites.

Module 3, Topic 5A will discuss the use of abstracts.



Handout 1-24: "Reading a Science News Article Frame"

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 3.2 Develop and implement a plan for researching...

SLO 4.1 Use language to encourage...

SLO 6.1 Students will know and use...

SLO 6.1.1 Use advance organization...

SLO 6.1.5 Use selective attention...

SLO 6.2.4 Use note taking...

SLO 6.2.7 Use elaboration...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Sequence 4

Reading for the Main Points (topic sentences): Distribute copies of **Handout 1-25: "Where Is the Science in Modern Sport?"** and review Appendix 3: Skimming and Scanning for Academic Purposes, which was given out earlier. What sciences are used in modern sports? Brainstorm the different branches of science, supplying vocabulary if necessary.

Read the title, and students predict the topic of the article.

Read the first paragraph together. What is the main idea? Note unfamiliar words that affect comprehension (e.g., pervade, maximize, potential), but not the science words.

Preview the Subheadings. What areas will be discussed (e.g., skills, equipment, tactics, psychology, medicine, nutrition, physiology)?

Use the jigsaw strategy to read the article.

As a class, note how the first sentence of each paragraph presents the main idea. What is the main idea of each section? How does the rest of the paragraph help explain the topic sentence? (C)

Consider using one of the assignment options provided.

Language Features

Vocabulary

tactics, psychology, nutrition, physiology, names of sciences, impact, pervade, maximize, potential

Sequence 5

Roundup

Make sure the students have entered new words into their dictionaries.

Learning Log: What was the most interesting fact you learned in this lesson? You have used several ways to get information from an article now. Which way works best for you?

Response Journal: Write five sentences about each of three topics for homework.

Student Learning Tasks**Assignment**

Brainstorm to predict what each branch of science could contribute to sport.

Predict what **Handout 1-25**: "Where Is the Science in Modern Sport?" will be about and read along as the teacher reads the article to the class.

Use the Jigsaw strategy to read the article.

Assignment Option

Using the information on the charts (without using the article), write a brief summary of the use of science in modern sports.

OR

Discuss and/or write a paragraph about any other examples of science in sport that you are familiar with.

Roundup

Enter new words into your dictionaries.

Learning Log: Answer the following questions:

1. What was the most interesting fact you learned in this lesson?
2. You have used several learning strategies to get information from an article. Which way works the best for you? Explain.

Homework: Write five sentences about each of three topics.

Teacher Notes and References

Handout 1-25: "Where Is the Science in Modern Sport?"

Appendix 3: Skimming and Scanning for Academic Purposes

Label the left-hand column of the chart with the different subheadings.



Jigsaw: Divide the class into five or six groups. Assign each group one or two (depending on length) sections of the reading.

The group scans its section together, checks key vocabulary, and notes the main contribution of science to the assigned aspect of sports on the chart.

Form new groups with one student from each topic so that each new group has the complete reading. Students explain their own section to the group, so that each person can complete her or his own chart.

Olympic Games—Some Track and Field Records

MEN's Track and Field Events

Event	Athlete	Nationality	Time/Dist.	Year	Place
100 metres	Donovan Bailey	Canada	9.84s	1996	Atlanta
200 metres	Michael Johnson	USA	19.32s	1996	Atlanta
400 metres	Michael Johnson	USA	43.49s	1996	Atlanta
800 metres	Vebjoern Rodal	Norway	1m 42.58s	1996	Atlanta
1,500 metres	Noah Ngeny	Kenya	3m 32.07s	2000	Sydney
5,000 metres	Said Aouita	Morocco	13m 5.59s	1984	Los Angeles
10,000 metres	Haile Gebrselassie	Ethiopia	27m 7.34s	1996	Atlanta
Marathon	Carlos Lopes	Portugal	2h 9m 21s	1984	Los Angeles
Steeplechase	Julius Kariuki	Kenya	8m 5.51s	1988	Seoul
High Jump	Charles Austin	USA	2.39 m	1996	Atlanta
Long Jump	Bob Beamon	USA	8.90 m	1968	Mexico City
Pole Vault	Jean Galfione	France	5.92m	1996	Atlanta
Shot	Ulf Timmermann	German Dem. Rep.	22.47 m	1988	Seoul
Discus	Lars Riedel	Germany	69.40 m	1996	Atlanta
Javelin**	Jan Zelezny	Czechoslovakia	90.17 m	2000	Sydney

WOMEN's Track and Field Events

Event	Athlete	Nationality	Time/Dist.	Year	Place
100 metres	Florence Griffith Joyner	USA	10.62s*	1988	Seoul
200 metres	Florence Griffith Joyner	USA	21.34s	1988	Seoul
400 metres	Marie-Jose Perec	France	48.25s	1996	Atlanta
800 metres	Nadiya Olizarenko	USSR	1m 53.43s	1980	Moscow
1500 metres	Paula Ivan	Romania	3m 53.96s	1988	Seoul
5000 metres	Gabriela Szabo	Romania	14m 40.79s	2000	Sydney
10000 metres	Derartu Tulu	Ethiopia	30m 17.49s	2000	Sydney
Marathon	Naoko Takahashi	Japan	2h 23m 14s	2000	Sydney
High Jump	Stefka Kostadinova	Bulgaria	2.05 m	1996	Atlanta
Long Jump	Jackie Joyner Kersee	USA	7.40 m	1988	Seoul
Shot	Ilona Slupianek	German Dem. Rep.	22.41 m	1980	Moscow
Discus	Martina Hellmann	German Dem. Rep.	72.30 m	1988	Seoul
Javelin**	Trine Hattestad	Norway	68.91 m	2000	Sydney

* indicates the record was set during one of the preliminary heats. In some cases a better result (time or distance) can be found for an event, but this usually means the better result was made with a wind speed greater than that allowed by the rules.

**The javelin record (over time) appears to go "backwards" at one point. This was because the javelin was being thrown so far (over 100 metres for men) it was becoming increasingly difficult to fit a safe throwing-range into a stadium, so the javelin was re-designed so as not to be thrown so far! This meant that records had to be "re-started."

Reading a Science News Article Frame

Read the article and write the facts in the boxes.

Title:
Author (if available):
Source of the article:
Date of publication:



Announcement

Problem

Solution

Characteristics

Process/Research

Result

Where Is the Science in Modern Sport?

By Craig Sharpe

Science and technology pervade so many aspects of our lives, both in work and leisure, that it would be remarkable if they did not have an equally great impact on sport. To maximize the sporting potential of an Olympic or national squad of competitors, expertise has to be drawn from a number of different branches of science, including physics, biomechanics, electronics, maths, chemistry, biochemistry, materials science, engineering, nutrition, medicine, psychology and physiology.

Skills

The competitor must be as skilled in the sport as possible, and in some "high skill" sports such as gymnastics, diving or trampolining, coaches will be highly expert at teaching the skills. A variety of analytical equipment may be used to aid in such skill coaching. For example: three-dimensional filming with digitizing into a computer for subsequent analysis of a high jump; slow-motion video analysis of a golf swing; "force platforms" built into gymnastics vaulting horses or discus circles to assess different forces exerted by the competitor at various phases of the movement. These involve a knowledge of biomechanics, electronics, physics and maths.

Equipment

The equipment has to be the best available, and this may range from a full-blown racing yacht to a vaulting pole to a pair of running shoes. In the pole-vault for example, the world record improved by only 23.5 cm from 1940-62, but in the following 20 years it rose by nearly 100 cm, largely due to improvements in the pole. New synthetic materials allow a much greater conversion of the kinetic energy of the run-up into the potential energy stored in the bending pole, which propels the vaulter ever higher. Also, such materials, by allowing greater bending, let the vaulters grip the poles much higher up, so their final "push-off" is from a greater initial height. Materials scientists and physicists are particularly helpful here.

In the case of distance running, elite marathoners running at a speed of 322 metres/minute were found

to use 62.1 ml of oxygen per kg body weight wearing "old style" shoes; but this fell to 60.8 ml/kg at the same speed when wearing the new "air-soled" shoes, even though these were heavier by 68 g per shoe. Thus the runner could go at the same speed with less energy or at a faster speed with the same energy—with the new shoes. Again the materials scientists (and the shoe designers) and the physiologists are vital in this type of research.

In wind-tunnel tests on cyclists it has been shown that at 40 kph, wind resistance may account for 90% of a cyclist's energy output. Doubling the speed produces a four-fold increase in wind-resistance. Wind-suits and helmets, together with streamlining the bicycle and the rider adopting a low profile riding posture, can reduce drag by up to 7%. This gives a performance increase of about 5 seconds at 50 kph over 4,000 metres, the distance of an Olympic pursuit race. At this speed, the conventional track bicycle, with 68 cm wheels, may have a drag of 1 kg, but a modern aerodynamic bicycle, with 60 cm wheels, may have a reduced drag of only 0.62 kg.

The newer bikes—such as Olympic gold medallist Boardman's Lotus bicycle, and world champion Graham Obree's Caimey bicycle, weigh under 6 kg compared to a conventional track bicycle weight of over 8 kg. This work on the bicycles and cyclists involves materials and fabrics science, engineering, biomechanics, physiology, electronics, computer expertise, and physics.

Tactics

Tactics are vital in team games such as curling, football, camogie, hockey, soccer and rugby, and racquet sports such as squash, badminton and tennis. Detailed video recording and analysis with the help of computerized notational systems may greatly help the coach to assess the strengths and weaknesses of his or her team or players. This involves high levels of tactical knowledge from the coaches, together with good computer programmer skills to devise the software.

(continued)

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Where Is the Science in Modern Sport? (continued)

Psychology

Many countries now put teams of fairly equal young men and women into the sports arenas of the world—and the difference between winning and losing may ultimately lie in psychological factors, such as ability to withstand the mental pressure of an entire country's expectations resting on the shoulders of, say, Sonia O'Sullivan, or on the Irish soccer or rugby team. Sports psychologists can also help to ensure that skills—e.g., racquet skills—do not break down under pressure, by using techniques such as "visualization" and "mental rehearsal," where the competitor goes over and over moves or situations or techniques in their minds.

Sports Medicine

The best competitor in the world is not going to win if they are too injured to compete—or if their training has been too severely curtailed. So the competitors may need the services of physiotherapists, doctors, osteopaths, and podiatrists (podiatry deals with foot abnormalities, which most of us have to a greater or lesser extent, and their causes and correction). Doctors and physiotherapists may now do special post-graduate courses in sports medicine, and then they often run special "sports injury" clinics.

Sports Nutrition

In recent years correct feeding of athletes together with fluid replacement has almost become a science in itself. A runner or games player can exhaust half the stored (glycogen) energy in muscle in a single hour of play or training—but there are ways of optimizing its replacement to allow high-quality play or training the next day. Similarly a squash player may lose fluid in the form of sweat at a rate of 1 to 1.5 litres per hour. This water loss must be replaced. Finally, in the sweat are the electrolytes Na, K, Mg and Cl which also have to be replaced later. All this involves biochemists, physiologists and dietitians, as well as some very sophisticated analysis techniques such as Nuclear Magnetic Resonance Spectroscopy, which can analyze levels of various chemical compounds and elements—such as lactic acid, or ATP or phosphorus—in living, exercising, human muscle.

Sports Physiology

Sports physiology is the analysis of physical fitness into its separate components, in order to see if a competitor is deficient in any of the fitness items and also if he/she is improving them with training. There are five main components of physical fitness:

1. Aerobic function—referring to the whole of oxygen intake, delivery and utilization, involving lungs, blood, heart, muscle capillaries, myoglobin and mitochondria.
2. Anaerobic function—referring to the ability of muscle to work extremely hard without any oxygen at all—as in fast bursts of speed or activity.
3. Muscle power, which involves the force a muscle can generate, together with the speed with which that force can be delivered—in other words, power is a combination of muscle strength and speed—and this can be measured in the laboratory with "isokinetic dynamometers." The technique of "muscle biopsy" can now help the physiologist to analyze the glycogen (muscle sugar), and other chemical content of individual muscle fibres.
4. Joint mobility refers to the range of movement at a joint. Very high levels are needed for gymnastics and dance, as well as hurdling and diving, and some martial arts such as taekwon do and karate. The movement range of the limb is measured by "goniometers."
5. Body composition refers to the percentage of fat in the body. Untrained young men and women, 17 to 18 years old, tend to have between 25-30% of fat if they are female, and 12-15% if they are male—a natural sex difference. However, distance runners of both sexes have much less fat than this, whereas sea swimmers of both sexes have much more (which helps them both to float better and to resist the cold). Body fat is measured by skinfold calipers—or by simple (and painless!) electrical methods.

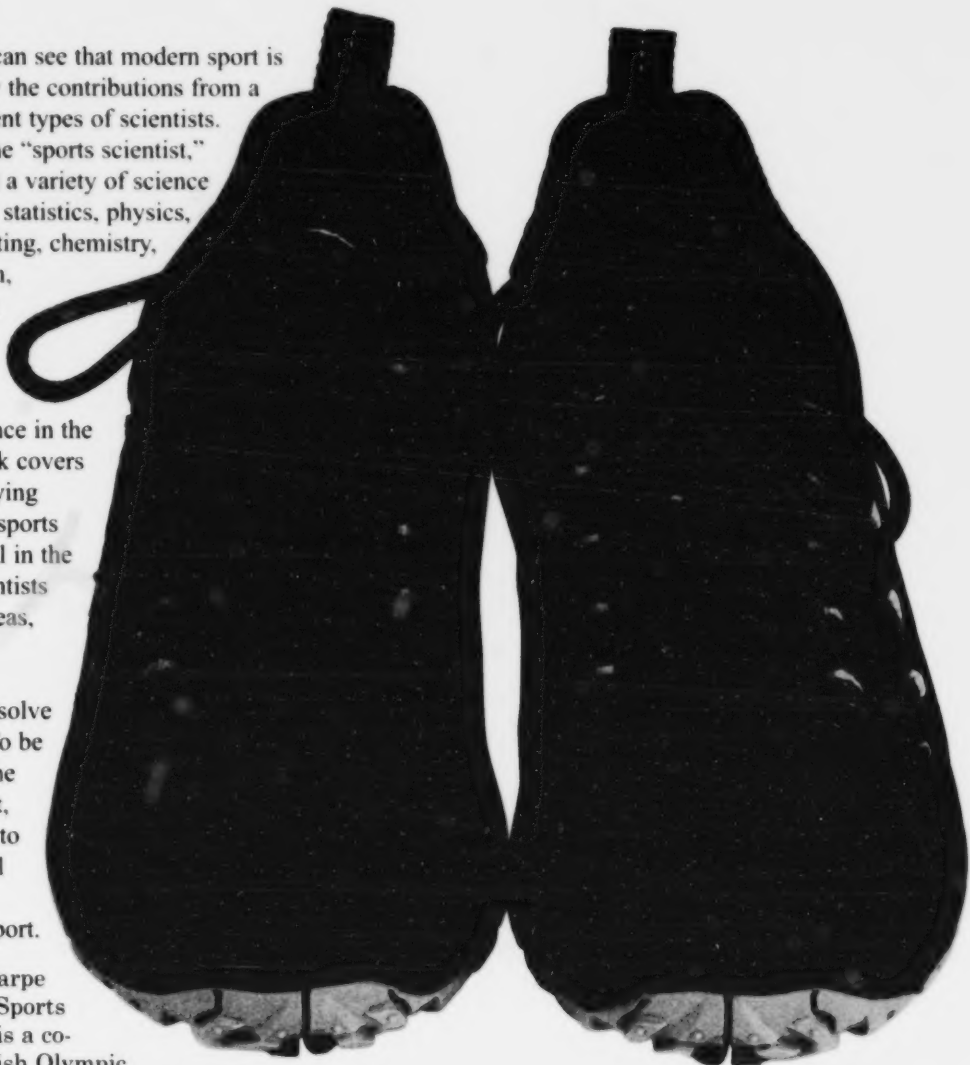
The scientists who carry out all these measurements will be sports physiologists working in a "human performance laboratory," as in the National Coaching and Training Centre in the University of Limerick, or Professor O'Brien and Dr Bamaville's laboratory in Trinity College Dublin.

(continued)

Where Is the Science in Modern Sport? (continued)**Conclusion**

From the above, one can see that modern sport is enormously helped by the contributions from a whole range of different types of scientists. Central to all this is the "sports scientist," who will have studied a variety of science topics, such as maths, statistics, physics, biomechanics, computing, chemistry, biochemistry, nutrition, psychology, and sport and exercise physiology. For example, the new degree in Sports Science in the University of Limerick covers all these topics in varying depth. The practising sports scientist will often call in the specialist help of scientists from other specific areas, such as physics, or engineering, or biomechanics to help solve particular problems. To be at all competitive in the world of modern sport, one must have access to the best in science and technology that is appropriate to one's sport.

Professor Craig Sharpe holds the Chair of Sports Science at UL. He is a co-founder of the British Olympic Medical Centre and attended four Olympic Games 1972-1988 as official/coach to the British Olympic Association.





Topic 5A

**Bias in Sports:
Olympic Skating
Judging Scandal**

(1 lesson)

In this lesson, students will be introduced to the major people involved in the judging scandal at the 2002 Winter Olympics: pairs skaters Jamie Sale and David Pelletier, and Anton Sikharulidze and Elena Berezhnaya, as well as French skating judge, Marie-Reine Le Gougne. They will discuss other judging scandals and the reasons they think these scandals occur. They will read an editorial with a particular bias about the skating

scandal and write one of their own, which will also include an element of bias. Some of the academic tasks are: skimming and scanning, finding relevant information, recognizing bias, understanding idioms, and writing an editorial.

Outcomes**Instructional and Learning Sequence**

SLO 1.3 Develop and express a personal position...

SLO 2.3.1 Use the structures and language features...

SLO 4.3 Use clear and respectful language...

Sequence 1**Activation**

Introduce the idea of one kind of bias in sports: judging bias. Have students examine the pictures you provided and ask them what they know about this particular judging scandal. Please see the Teacher Notes and References column for background information.

Discuss the scandal as a class.

Ask the following focus questions: Do you know of any examples of bias in judging of sports in your country? In the Olympics? Are you familiar with the history of judging in skating in the Olympics? Why do judges not judge fairly? What are the reasons? Personal? Professional? Political? Do you believe there are allegiances formed between some countries, encouraging them to judge as a block in some professional sports? (C)

Language Features**Vocabulary**

figure skating, pairs, robbed, cheated, bias, perfection, pressure
skating terms

Pronunciation

stress, phrasing (have students try to pronounce the names of the skaters and the French judge)
linkage
reduction

Discourse Features

expressions for discussion

Student Learning Tasks

Discuss what you know about the Jamie Sale and David Pelletier judging scandal.

Discuss the focus questions to gain an understanding of bias in judging of sports.

Teacher Notes and References

Visuals: Pictures of Jamie Sale and David Pelletier, Anton Sikharulidze, Elena Berezhnaya, and French figure skating judge, Marie-Reine Le Gougne (teacher-provided)



"A Sport on Thin Ice" is available at <www.time.com/time/olympics2002/article/0,8599,203477,00.html>. Use the article as a springboard, taking from it what you need for your specific class.

Find pictures of Sale and Pelletier at: <www.geocities.com/salepelletier2002/pictures.html> and <http://news.bbc.co.uk/winterolympics2002/hi/english/photo_galleryes/newsid_1826000/1826581.stm>.



You will want to lead students back to previous lessons that focused on winning—what it means to the athlete and to the athlete's country. Since the discussion is informal, you may want to work on aspects of pronunciation and conversational gambits throughout this lesson.

Cultural Opportunity: This scandal has been called "Skategate." You might want to discuss this play on the term "Watergate."

Outcomes	Instructional and Learning Sequence													
SLO 1.1 Engage with increasingly difficult oral and/or visual texts... SLO 1.4 Show an awareness of organizational patterns... SLO 1.7 Evaluate a given text... SLO 4.6 Respond to and critique a variety of individual perspectives...	Sequence 2 Distribute Handout 1-26: "When Judges Need to Be Judged: Skategate." Discuss the structure of editorials with the class. (C) Arrange students into groups of three and assign the reading. Ask students: What information does the writer give in the introductory paragraph? What is the main idea of the second paragraph? Where does she introduce the main idea of the editorial? What ideas are presented in paragraphs 3, 4, and 5? What ideas does the writer want the reader to think about? In which paragraphs does the writer express her own personal feelings? Students read the article again in depth. As they are reading, students should note writing style. How would they describe it? Are there examples of bias? Why are there so many idioms? Note how the writer presents the problems and the solutions as she sees them. What are the steps in the presentation of her argument? Is she successful? Why or why not? (B) These ideas should be shared as a class. (C) <table border="1"> <tr> <td rowspan="4">Language Features</td> <td>Vocabulary</td> </tr> <tr> <td>differential, flawless, collision, technical merit, fragile, ethics, fiascos, integrity, hypocrisy, major overhaul, scandal</td> </tr> <tr> <td>Idioms: robbed, popped into my head, a hair of a point, here we go again, no-brainer, writing (should have been) on the wall, walked away with, the dark side, has once again reared its ugly head, cleaned up, put your money where your mouth is</td> </tr> <tr> <td>Pronunciation</td> </tr> <tr> <td></td> <td>stress, phrasing</td> </tr> <tr> <td></td> <td>Discourse Features</td> </tr> <tr> <td></td> <td>transition markers</td> </tr> <tr> <td></td> <td>format of an editorial</td> </tr> </table>	Language Features	Vocabulary	differential, flawless, collision, technical merit, fragile, ethics, fiascos, integrity, hypocrisy, major overhaul, scandal	Idioms: robbed, popped into my head, a hair of a point, here we go again, no-brainer, writing (should have been) on the wall, walked away with, the dark side, has once again reared its ugly head, cleaned up, put your money where your mouth is	Pronunciation		stress, phrasing		Discourse Features		transition markers		format of an editorial
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	Pronunciation													
	stress, phrasing													
	Discourse Features													
	transition markers													
	format of an editorial													

Student Learning Tasks

Discuss what you know about the structure of editorials.

In groups of three, skim the article by looking at the title, reading the first and last paragraphs in their entirety, and by reading the topic sentences of the other paragraphs.

Once you get the main ideas, read the article again, in depth this time, recording new vocabulary in your personal dictionary and focusing on the structure of the editorial.

Teacher Notes and References

Handout 1-26: "When Judges Need to Be Judged: Skategate"

Outcomes

SLO 1.3 Develop and express a personal position...

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.1.1 Analyze and edit texts...

SLO 2.1.2 Use standard Canadian spelling...

SLO 2.1.3 Use developing control of grammatical structures...

SLO 6.2.8 Use imagery...

SLO 6.2.11 Use transfer...

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 2.3.1 Use structures and language features...

Instructional and Learning Sequence

Discuss the text format of editorials. Editorials usually express specific positions or opinions. As a class, brainstorm topic ideas. (C)

Students choose a topic, and then design a graphic organizer to plan their editorial and organize their ideas. Students express a clear position and provide a justification for their position.

Students write an editorial using their graphic organizers.

Language Features

Discourse Features

- format of an editorial
- transition markers

Sequence 3

Roundup

Have students think about the differences between objective and subjective writing. Ask each student to brainstorm a list of the differences. (I) These lists may be discussed and a master list may be created to be used in future lessons. (C)

Language Features

Discourse Features

- contrast markers

Student Learning Tasks

Design a graphic organizer to plan your ideas, express a clear position, and provide justification.

Write an editorial of approximately 500 words on any controversial aspect of sport that is of interest to you, using a style similar to the style of **Handout 1-26: "When Judges Need to Be Judged: Skategate."**

Assignment

Make a list of differences between objective and subjective writing. Share your list with the class.

Teacher Notes and References

Graphic Organizer (see examples of graphic organizers in the "Teaching and Learning EAL in the Senior Years" section in the Appendices)



Handout 1-26: "When Judges Need to Be Judged: Skategate"

When Judges Need to Be Judged: Skategate**Pairs Skating Salt Lake City Olympics, 2002:**

"Robbed!" was the first word that popped into my head as I watched the scores posted for the Olympic Pairs event at the Salt Lake Olympics. Before the final performance, Canadians Jamie Sale and David Pelletier and Russian pair Elena Berezhnaya and Anton Sikharulidze sat at the number one and two spots with only a hair of a point differential separating the two. After skating a flawless final performance, Sale and Pelletier were cheated out of the gold medal which was instead awarded to Berezhnaya and Sikharulidze despite a major error in their performance. "Here we go again!" I thought to myself.

The judges' decision should have been a no-brainer. The Canadians skated the program of their lives while Sikharulidze was unable to land one of the necessary jumps. Add to that the fact that Sale and Sidharulize had a near disaster of a collision in the warm up, and the writing should have been on the wall. However, although Sale and Pelletier kept pace in technical merit, they received second-place votes for presentation, and the Russian pair walked away with the gold. And all because of a "fragile" French judge who said she was pressured to vote for the Russian pair. Where have all the ethics gone?

Judging fiascos like this are ongoing at the Olympics, especially in figure skating. The Olympics are supposed to stand for absolute integrity and sportsmanship, fairness, dignity, respect, and ethical values. What hypocrisy! At every Olympic gathering, there seems to be some outrageous decision that was influenced by factors outside the skills of the competitors. It seems to me there is little difference between an athlete who tests positive for a banned substance and a judge who is personally biased or who bows to pressure. How can we ban an Olympic athlete from the Games, yet

accept a judge who cheats? The dark side of figure skating has once again reared its ugly head. The sport has to be cleaned up; otherwise, it does not belong in the Olympics.

Ottavia Cinquanta, president of the International Skating Union, has suggested a major overhaul of the figure skating scoring system in response to this latest scandal and the outcry it has caused. The plan outlined suggests replacing the present system with a simpler way of scoring jumps, footwork, spins, and other elements based on their difficulty. It also calls for fourteen judges, rather than the present nine, but only the scores from seven would count. A computer would randomly choose the judges whose scores would be used.

I'm glad to see a serious response to this cloud over Olympic skating, but I'll be happier when a positive change is actually in place. If the games are to regain public confidence, the problem of judges needs to be addressed. Of course, actions speak louder than words. So Cinquanta, we'll all be waiting for you to put your money where your mouth is.







Topic 5B
Bias in Sports:
Gender Bias

(1 lesson)

This lesson focuses on gender bias in sports; in this case, the sport is young people's hockey. Students will examine the positive and negative ideas associated with boys and girls on integrated sports teams, debate the points informally, and/or write a position paper on the subject. Some of the academic tasks are: evaluating an advertisement; recognizing and discussing

implications; recognizing unsupported claims and claims supported by evidence; extracting salient points to summarize; introducing, making, and following an argument; explaining, amplifying, illustrating, and emphasizing a point; quoting directly; citing; and writing a short persuasive essay of 400 words.

Outcomes	Instructional and Learning Sequence								
SLO 1.3 Develop and express a personal position... SLO 1.5 Examine and interpret various visual media... SLO 2.1.3 Use developing control of grammatical structures... SLO 4.2 Communicate effectively to work with others... SLO 6.2.7 Use elaboration... SLO 6.2.8 Use imagery... SLO 6.2.12 Use inferencing...	Sequence 1 Activation Step 1: In groups of three, students examine the <i>Maclean's</i>/Rogers advertisement "Canada Indepth" and write down everything they see in the picture. Ask the students to draw a conclusion about the purpose of the ad. (6) Share ideas as a class. Explain Appendix 17: Evaluating Ads. Using this guide, ask what the message of this particular ad is. Who is the intended audience? What point is being made? How does the creator make this point? What techniques are used? (6) Step 2: Give each student a piece of paper. Have them create two columns, titled "Men" and "Women." Give them three or four minutes to write down as many sports as they can think of that are traditionally associated with each gender. Sports can be written in both columns. (1) Share ideas and create a class list on the board. Ask: How many sports are listed in both columns? How would this list have been different when your parents were attending school? How do these lists differ by country of origin? According to the lists, what are the differences between girls' and boys' sports? How do amount of contact, skills necessary, and popularity of the sport factor into the equation? (6) <table border="1"> <tr> <th>Language Features</th><th>Vocabulary</th></tr> <tr> <td></td><td> Names of equipment: helmet, shin pads, shoulder pads, elbow pads, hockey pants, sticks, face guard, protective cup, laces, gloves, blade, jersey, garter, mouth guard, girdle, insoles, etc. Names of other articles used by boys and girls: gauze, tape, thread, safety pins, razor, deodorant, shampoo, hairdryer, scrub brush, accessories, jewellery, etc. Ad-related terms: caption, slogan, model, setting, brand, logo, visual, response, evoke, mood, hook line, celebrities, qualifiers Idiom: factor into the equation </td></tr> <tr> <td></td><td>Discourse Features</td></tr> <tr> <td></td><td>discussion expressions</td></tr> </table>	Language Features	Vocabulary		Names of equipment: helmet, shin pads, shoulder pads, elbow pads, hockey pants, sticks, face guard, protective cup, laces, gloves, blade, jersey, garter, mouth guard, girdle, insoles, etc. Names of other articles used by boys and girls: gauze, tape, thread, safety pins, razor, deodorant, shampoo, hairdryer, scrub brush, accessories, jewellery, etc. Ad-related terms: caption, slogan, model, setting, brand, logo, visual, response, evoke, mood, hook line, celebrities, qualifiers Idiom: factor into the equation		Discourse Features		discussion expressions
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	Discourse Features								
	discussion expressions								

Student Learning Tasks

In groups of three, examine the picture and write down everything you see. Draw a conclusion about the purpose of the ad and share with the class.

Make a list of sports that are traditionally associated with each gender.

Teacher Notes and References

Handouts or an overhead master of the *Maclean's*/Rogers advertisement "Canada.

Indepth" on page 53 of the December 16, 2002 edition of *Maclean's*. The ad is available from other editions running from October to December of that year. The ad features Canada's Men's and Women's hockey teams, showing all the contents of their equipment bag arranged neatly on the ice surface.

Appendix 17: Evaluating Ads

Cultural Opportunity: Some students may not be familiar with hockey or with the names of the equipment. Take time to introduce the importance of hockey in Canada and to name some of the pieces of equipment.

Strategies: Since this is the first time students will be using the strategies to analyze advertisements, go over the strategies with them.

Outcomes

SLO 2.2 Use several visual techniques...

SLO 4.1 Use language to encourage...

SLO 4.2 Communicate effectively...

SLO 6.2.7 Use elaboration...

SLO 6.2.3 Use grouping of items to classify...

SLO 6.2.9 Use summarization...

Instructional and Learning Sequence

Sequence 2

Write the following statement on the board: Girls should be allowed to play sports with boys.

Ask the students whether they support the statement.

Divide the class into pro and con groups for **discussion**. Students discuss the following questions: Should boys and girls be allowed to play sports together? Why or why not? What are the practices in different cultures (nations) or sports? If you think they should be allowed to play together, at what level? Until what age? In what types of sports? Decide upon the pros and cons of playing mixed sports.

Give students 10 to 15 minutes for the initial discussion. You may want to pre-teach some of the suggested vocabulary. Have students record information on the graphic organizer **Handout 1-27: "Pros and Cons"** to summarize their discussions. (6)

Language Features

Vocabulary

sexual discrimination, second-class status, affirmative action, equity, gender equality, feminism, equal opportunity, injustices, disadvantaged, male domination, elitism, physical attributes, agility, exploitation, media coverage, injuries, brawn versus brain, vulnerable, aggressive, assertive, confidence, stamina, shortcomings, inferior, superior

Debating terms: affirmative, opponent, oppositional, proposition, refute, defend, argument, motion

Discourse Features

Expressions for discussion: to agree and disagree, to interrupt, to question, to add information, etc.
organization of an argument

Student Learning Tasks

In pro and con groups, share your reasons for supporting “the position,” and discuss how you may respond to opposing views. Discuss the following questions: Should boys and girls be allowed to play sports together? Why or why not? What are the practices in different cultures (nations) or sports? If you think that they should be allowed to play together, at what level? Until what age? In what types of sports? Decide on the pros and cons of playing mixed sports.

Record information on the graphic organizer “Pros and Cons” to summarize your discussions. (■)

Teacher Notes and References

Handout 1-27: “Pros and Cons” graphic organizer

Appendix 7: How to Detect Bias

Introduce the concept of debating and the terms “affirmative” and “negative” positions. Divide the students into “pro” and “con” groups, based on personal preference. Ask each group to select a speaker and a recorder. Then, each group shares its reasons for supporting the position and its potential responses to opposing views. The two speakers will, in turn, first share their reasons for supporting their position and then, following a brief break to confer with group members, have an opportunity to refute the opposing view.

You may want to pre-teach some of the suggested vocabulary. Have students record information on the graphic organizer “Pros and Cons” to summarize their discussions.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.4 Show an awareness of organizational patterns...

SLO 1.7 Evaluate a given text...

SLO 2.1.3 Use developing control of grammatical features...

SLO 3.1 Seek, organize, and synthesize information...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 2.3.1 Use the structures and language features...

Instructional and Learning Sequence

In position groups, students research information and data to support their positions.

The pro and con groups should be of equal size. Each person in each group has a different reading that supports the group position. Provide appropriate readings (see the Teacher Notes and References column) or a list of sources from which students may choose or obtain appropriate articles. Students skim the article to get the main idea, and do a deeper reading. On a student-created graphic organizer, students list all the facts that the author uses to support his or her position. (I)

Students also list any other ideas that came up in the previous discussion.

Reorganize students into a pro and con group to share their ideas. Finally, students choose the facts that they agree make the best argument and organize the facts in order of importance. (E)

Language Features

Vocabulary

recycled from earlier in the lesson to describe attitudes in readings

Discourse Features

Discussion expressions: review

Regroup students in new groups of two, one with a supporting view and one with an opposing view. Together they debate informally. Students face each other and try to maintain eye contact. If new points arise, record them. (P)

All students discuss the activity and decide on the best points made. How did these debates compare to the earlier ones? (E)

Teach students preliminary debating tactics to be added to and used in future lessons.

Language Features

Discourse Features

Discussion expressions: to state opinion, to agree, to disagree, to add information, to question

Language functions: debating; introducing, clarifying, summarizing, defining, supporting, validating, explaining, restating, synthesizing, querying, reacting, undermining, paraphrasing

Student Learning Tasks

In your position group (pro or con), skim an assigned article to get the main idea and do a deeper reading. Create a graphic organizer, and list on it all the facts that the author uses to support his or her position, as well as other ideas from previous discussions. (I)

Debate in new groups of two: Should boys and girls play together on sports teams? (P)

Teacher Notes and References



Give students a potential list of sources (teacher-created). Some are listed below, but please check them out first.

To discuss gender bias:

1. Gender Bias in Televised Sports at:
<www.fair.org/extra/9200/sports-bias.html>
2. Gender Discrimination and the Olympic Games at:
<www.womenssportsfoundation.org/cgi-bin/iowa/issues/disc/article.html?record=86>
3. Schoolgirls: Classification, Roles, and Sports at:
<www.womenssportsfoundation.org/cgi-bin/iowa/issues/disc/article.html?record=61>

To support choice:

1. Contact Sports—Girls and Contact Sports: The Foundation Position at:
<www.womenssportsfoundation.org/cgi-bin/iowa/issues/part/article.html?record=960>
2. Co-Ed Participation—Girls Playing on Boys' Teams and Male Versus Female Competition: The Foundation Position at:
<www.womenssportsfoundation.org/cgi-bin/iowa/issues/rights/article.html?record=569>
3. Girls and Physical Activity at:
<www.caaws.ca/Girls/boys_teams.htm>

To support women's teams/sports:

1. To Be a Player at:
<http://more.abcnews.go.com/sections/us/DailyNews/seneca_sports.html>
2. How Long Should Boys and Girls Play on the Same Team? at <http://ed-web3.educ.msu.edu/ysi/Spotlight2002/how_long_should_boys_and_girls_p.htm>

Outcomes**SLO 2.1.1** Analyze and edit texts...**SLO 2.1.2** Use standard Canadian spelling...**SLO 2.1.3** Use developing control of grammatical structures...**SLO 2.4** Use the steps of the writing process...**SLO 3.3** Quote from or refer to sources...**SLO 6.2.11** Use transfer...**SLO 6.2.13** Use recombination...**Instructional and Learning Sequence****Optional Activity**

You may choose to use this optional activity to introduce the assignment in this segment. Introduce students to Canadian girls and women who have been successful on boys' hockey teams to see if their debate positions can be influenced.

1. Students watch/listen to a video or audio clip.
2. Groups of students watch/listen to clips based on skill levels and share information.

Review the rules of persuasive essay writing with students and **Handout 1-28: "Graphic Organizer for a Persuasive Essay."**

Writing Assignment

Have students write a short persuasive essay of approximately 400 words, taking one of the positions on this topic.

Review good listening and viewing skills.

Criteria: Three references to the article by paraphrasing or quoting, citing sources and integrating quotations. Five new vocabulary words or phrases as well as a persuasive essay graphic organizer to organize the essay.

Language Features**Discourse Features**

mini-lessons on paraphrasing, citing, quoting
format of a persuasive essay

Student Learning Tasks

Assignment

1. Watch a video or audio clip from the CBC archives. OR
2. In groups, watch/listen to different clips based on skill levels, and share information with the class.

Discuss how the clips affected your thinking. How were the girls/women portrayed? What skills made them capable of "playing with the boys?" (6)

Write a 400-word persuasive essay on the topic of girls and women who have been successful on boys' hockey teams, using **Handout 1-28: "Graphic Organizer for a Persuasive Essay"** to organize your ideas.

Criteria: Make three references to the article by paraphrasing or quoting. Cite your sources and integrate quotes into the text. Include five new vocabulary words or phrases, and organize your essay with a persuasive graphic organizer.

Teacher Notes and References

Internet Resources:

Go to Google. Type in "CBC archives" and when the page comes up, click on "Sports." On the left-hand side at the top you will find the search option. Type in "Fair Game: Pioneering Canadian Women in Sports." This title will come up on the next page. Click on it, and you will find several clips about girls playing hockey with boys. There is also an icon at the bottom right that provides links to "6 Additional Clips about Fair Game." Click on this for more stories. The clips vary in length and difficulty. Two clips are televised and four are radio clips. Here are the clips mentioned on both pages:

- "He's a Girl" (Abby Hoffman)
- "Playing with the Big Boys" (Hayley Wickenheiser)
- "Making Hockey History" (Manon Rheaume)
- "Ambassador off the Ice" (Cassie Campbell)
- "A Rising Star" (Abby Hoffman)
- "Hayley Wickenheiser Reflects on Playing Hockey with the Men"

You may want to briefly discuss each clip while the students watch or listen to it. Have students jot down information that impressed them either negatively or positively. Students may need an organizer to do this.



Handout 1-28: "Graphic Organizer for a Persuasive Essay"

Outcomes

SLO 2.1.1 Analyze and edit texts...

SLO 2.1.3 Use developing control of grammatical structures...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 2.3.3 Produce effective oral presentations.

SLO 3.1 Seek, organize, and synthesize information...

SLO 3.2 Develop and implement a plan...

SLO 4.6 Respond to and critique...

SLO 6.2.9 Use summarization...

SLO 6.2.11 Use transfer...

Instructional and Learning Sequence**Optional Speaking Activity**

Distribute **Appendix 6: How to Debate in Groups**. Have a group debate. Organize groups of six for each side of the debate.

Consider using a student judging panel.

Have the debates in class. Judges will award points based on a teacher-created rubric.

Language Features**Discourse Features**

Expressions for debating: stating assertion, stating opinion, agreeing, restating, rephrasing, paraphrasing, summarizing, clarifying, interrupting, questioning, rephrasing, undermining, concluding

Sequence 3**Roundup**

Students write a personal response to today's lesson.

OR

Write a reflection

OR

Students conduct a poll to see what percentage of the student population agrees and/or disagrees with the debate topic.

Student Learning Tasks

Using the Appendix 6: How to Debate in Groups, students on each side of the debate work together to organize their points. Each student takes an equal load. Practise speaking, pronunciation, emphasis, organization of points, et cetera. (8)

Personal Response

Discuss whether the lesson strengthened or changed your point of view. (1)

OR

Write a reflection about how the concept of girls playing on boys' teams would be addressed in your country of origin and how you would convince someone that the idea is possible.

OR

Conduct a poll, do statistical analysis on the data, and come to some conclusions. For example: How do boys feel? How do girls feel? How does age affect the responses? How does ethnic origin affect the responses? How do extracurricular interests affect the responses?

Teacher Notes and References**Appendix 6: How to Debate in Groups**

Judging rubric (teacher-provided)

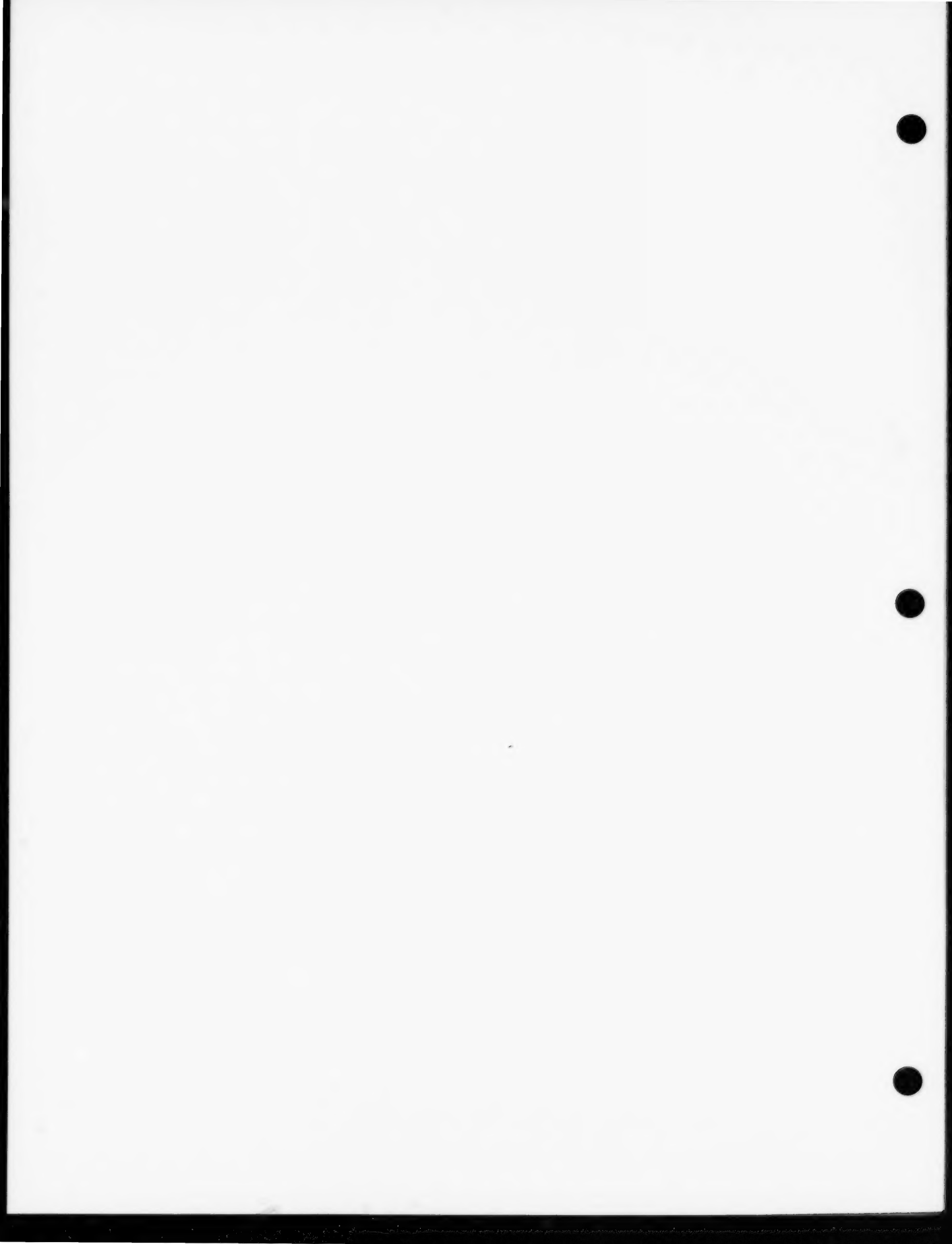
Teacher Resource: Developing Academic Language Skills and Fluency through Debate at: <<http://language.hyper.chubu.ac.jp/jalt/pub/tit/98/oct/stewart.html>>



Pros and Cons

Cons

[illegible]This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



Graphic Organizer for a Persuasive Essay

Graphic Organizer for a Persuasive Essay

Title:

--

Introduction:

Hook:

**Connecting sentences/
supporting ideas:**

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

Thesis statement:

Body paragraph #1

Topic sentence: (Idea 1)

**Supporting example/
detail 1:**

Supporting example/
detail 2:

Supporting example/
detail 3:

Concluding sentence:

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is a vertical margin line on the left side, creating a narrow left margin. The paper appears to be from a notebook or a standard sheet of stationery.

(continued)

Graphic Organizer for a Persuasive Essay (continued)

Body paragraph 2:
Topic sentence: (Idea 2)

**Supporting example/
detail 1:**

**Supporting example/
detail 2:**

Supporting example/
detail 3:

Concluding sentence:

This image shows a single page of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is a vertical margin line on the left side, creating a narrow left margin. The paper appears to be from a notebook or a standard writing template.

Body Paragraph 3:
Topic sentence: (Idea 3)

Supporting example/
detail 1:

**Supporting example/
detail 2:**

**Supporting example/
detail 3:**

Concluding sentence:

[illegible]

(continued)

Graphic Organizer for a Persuasive Essay (continued)

Conclusion:
Restatement of thesis:

Summary of supporting
examples/details:

Reflection/recommendations/
prediction:





Topic 6A
**When Sport
Becomes
Unhealthy: Body
Image: Anorexia**

(1 lesson)

This lesson focuses on attitudes toward thinness. The illness of anorexia is examined by reading a personal story. Students will write a personal response to the story. Some of the academic tasks are: reading critically, comparing/contrasting, detecting personal

bias, taking notes, using adjectives, and stating and supporting a point of view.

Outcomes

Instructional and Learning Sequence

Sequence 1

Activation

Discuss with the class: Why do so many people, especially young women, want to be thin? What influences them? Why do female athletes want to be thin? Ask students to brainstorm famous people who they know or believe are anorexic. List students' contributions on the board. (C)

SLO 1.3 Develop and express a personal position...

SLO 1.5 Examine and interpret various visual media...

SLO 6.2.7 Use elaboration...

SLO 6.2.5 Use deduction and induction...

Language Features

Pronunciation

use of commas after parenthetical expressions and subordinate word groups beginning a sentence

Discourse Features

Language of cause/result: Girls want to be thin; consequently/as a result/in order to achieve their goal, they...; **Because/since** girls want to be thin, they...

SLO 2.2 Use several visual techniques...

SLO 4.6 Respond to and critique...

SLO 5.2 Analyze and use the appropriate level of formality...

SLO 6.2.10 Use translation...

Ask: What is the difference between thin and skinny? Introduce some of the idioms used in North America to describe people who are too thin. Ask students if they have these kinds of idioms in their first language. (C)

The terms "connotation" and "denotation" should be reviewed or taught.

Divide the class into triads to develop a graphic organizer description of a person who is fit and thin and one who is anorexic.

Language Features

Vocabulary

Denotation and connotation: connotations of terms with similar denotations: thin~skinny, slender~waif-like, slim~emaciated, etc.

Idioms meaning too thin: toothpick, skinny as a rail, stick, bonerack, skeleton

Structures

adjectives; order of adjectives

Discourse Features

language of comparison and contrast

Student Learning Tasks

Brainstorm for famous people who are anorexic.

Work in triads to describe a person who is fit and thin and one who is anorexic. Use or create a compare and contrast graphic organizer to record ideas. (■)

Teacher Notes and References**Visuals**

Pictures of thin people; athletes, fashion models, average people, people who are anorexic (teacher-provided)

Visuals may be obtained from health magazines, fashion magazines, or youth-oriented magazines.

See <www.Anorexicweb.com> for an independent site dedicated to information on anorexia. This site may be a source of visuals for this exercise.

Alternate Visuals

Introduce the topic with the animated clip from "Face the Issue.com" at:

<www.facetheissue.com/anorexiamovie.html>.

There are several useful sites on anorexia and other eating disorders; for example, at:

<www.phe.queensu.ca/anab/>

<www.anred.com>

<<http://familydoctor.org/063.xml>>



Make sure that students talk about the media, role models, and their female and male heroes.

Venn diagram (see Teaching and Learning EAL in the Senior Years section in the Appendices)

Students may use a thesaurus or translators to create a good list of descriptive adjectives.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.4 Show an awareness of organizational patterns...

SLO 1.7 Evaluate a given text...

SLO 6.2.4 Use note taking...

SLO 3.3 Quote from or refer to sources...

SLO 6.2.7 Use elaboration...

SLO 1.3 Develop and express a personal position...

Instructional and Learning Sequence

Sequence 2

Distribute Handout 1-29: "A Starving Daughter, a Helpless Mother."

Explain that this is a different type of writing: a personal story. In triad groups, students read, make notes, and look at how personal bias is reflected. They also look for words expressing pain, anger, worry, criticism, passion, and negativity. Students meet with another triad to compare their answers. (B)

Discuss with the class **Handout 1-29: "A Starving Daughter, a Helpless Mother."** Focus on the main points, how the author reflects her personal bias, and record ideas on the board. Students must qualify their answers by giving proof from the article, quoting and using reported speech. (C)

Language Features

Vocabulary

facet, triggers, symptoms, epidemic proportions, consumes, withers, weariest, androgynous, discernible, unfathomable, aspire, flaw, criticizing, moulds, imperfect, unworthy, heinous, decreed

Expressions: self-starved, gone public with, societal pressures, personality-driven, perceived visible flaws

Reported speech: commonly used reporting verbs: states, indicates, suggests, declares, contends, surmises, argues, maintains, etc.

Structures

use of third person singular, present tense when referring to an article for proof

Punctuation: use of quotations with direct speech

Discuss Appendix 15: Tone Vocabulary with the class. Each student decides what is the tone of the article. They may use the tone guide. Answers will be similar. (I), then (C)

Assignment

Each student decides on the tone of the article in **Handout 1-29: "A Starving Daughter, a Helpless Mother,"** referring to Appendix 15.

Language Features

Vocabulary

To express tone of article (see Appendix 15: Tone Vocabulary): concerned, questioning, angry, bitter, condemnatory, critical, etc.

Student Learning Tasks

In triads, read the story together, using the reading strategies you have learned (skimming, scanning, reading in depth), and take notes on the main points and the author's bias. (■)

Discuss the main points and author's bias in the article, and qualify your answers, providing proof from **Handout 1-29: "A Starving Daughter, a Helpless Mother."**

Assignment

Decide on the tone of the article in **Handout 1-29: "A Starving Daughter, a Helpless Mother,"** referring to Appendix 15.

Teacher Notes and References

Handout 1-29: "A Starving Daughter, a Helpless Mother"

Appendix 7: How to Detect Bias



You may choose key terms before reading, and teach them using a matching exercise, fill-in-the-blanks, or context clues.

There are more than 10 to 15 key words here; many will be used in other lessons and modules. These words are listed in the Language Features column.



Appendix 15: Tone Vocabulary
(You may use this as a class Handout 1-or for reference.)

Outcomes

SLO 1.3 Develop and express a personal position...

SLO 2.1.1 Analyze and edit texts...

SLO 2.1.2 Use standard Canadian spelling...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 2.4 Use the steps of the writing process...

SLO 5.7 Select and present ideas... keeping in mind the intended audience.

SLO 6.2.11 Use transfer...

Instructional and Learning Sequence**Writing Assignment**

Students think of one word to describe their personal reaction to the story. **(I)** The assignment is to write a personal response to the story and to the illness of anorexia. Students use at least five of the new expressions or vocabulary words from the article, and substantiate their reactions using at least three facts or ideas presented in the article or gleaned from any research they might do. Students may quote directly or paraphrase, using some of the reporting verbs listed earlier in the lesson. They should create a specific tone for their response and keep this in mind as they write. The response will be shared with one other student for comments, then handed in for marking. **(P)**

The teacher can decide if he or she wants the personal response done with or without research.

**Language
Features****Structures**

adjectives to describe emotion

Student Learning Tasks**Assignment**

Write a personal response to the story and to the illness of anorexia, using **Handout 1-30: "Graphic Organizer: My Opinion"** as an organizer. Include the following:

- five new expressions or vocabulary words from the article
- at least three facts or ideas presented in the article or gleaned from any research you might do, quoting or paraphrasing some of the reporting verbs listed earlier in the lesson, and creating a specific tone for your response

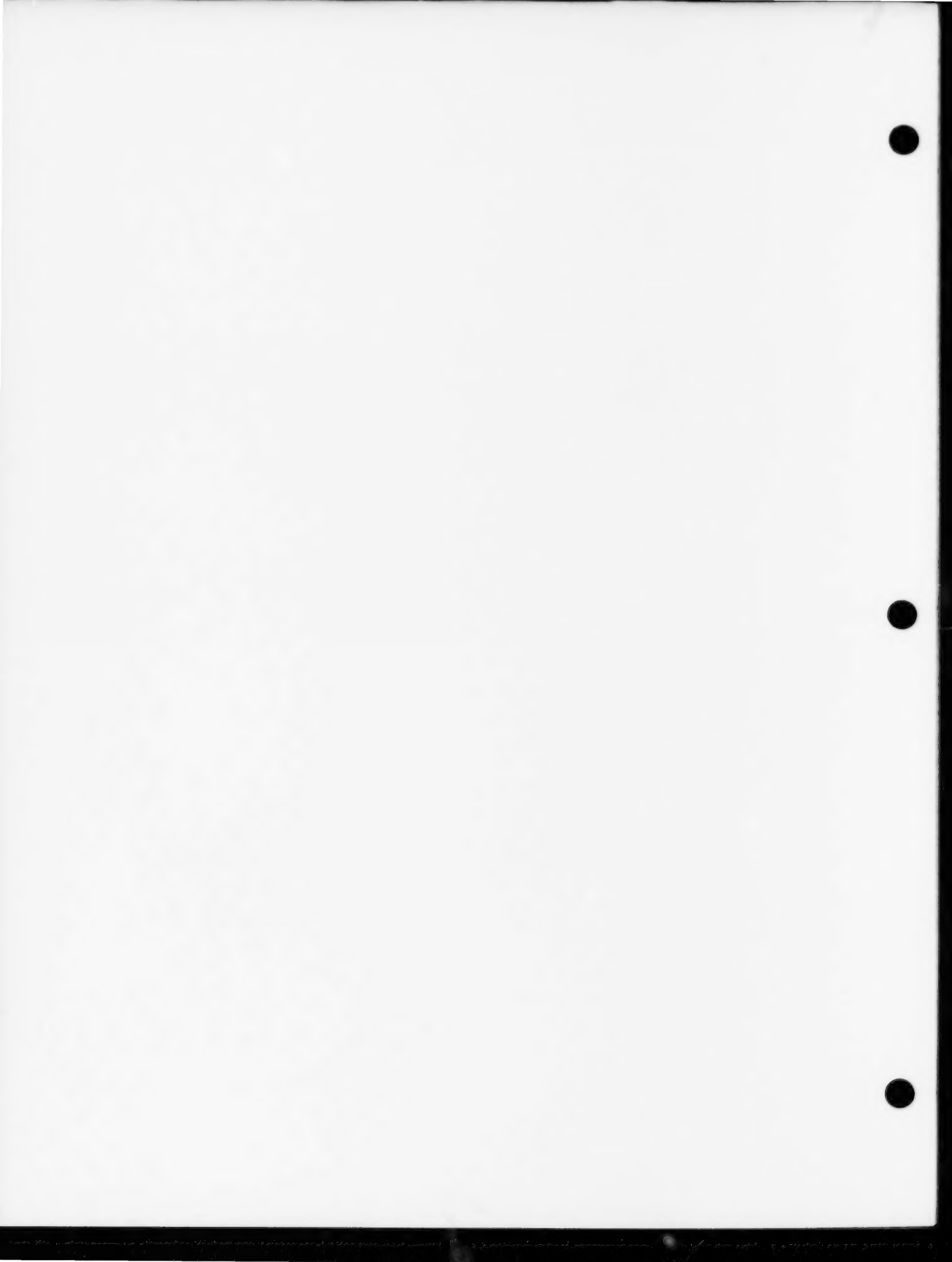
Share your responses with a partner for comments, and hand them in for marking.

Teacher Notes and References

Handout 1-30: "Graphic Organizer: My Opinion"



The teacher can decide if he or she wants the personal response done with or without research.



Free Press Article

A starving daughter, a helpless mother

FOUR years ago, I had heard of anorexia, but I did not know anyone who had it, and thought it was actually quite rare.

Four years later, I am painfully and intimately aware of every facet of this disease; the triggers, the symptoms, the treatment, as well as the guilt, fear and utter sadness it causes, not only for the sufferer, but for their families and friends, as well.

I am also aware of the epidemic proportions this illness is reaching.

How it steals our children younger than ever before and keeps them longer.

And I have grown tired.

I am tired of hearing well-meaning friends and total strangers tell my anorexic daughter that she is "so cute" and "adorable."

Don't they see that she is sick?

I am tired of the haunting look in my child's eyes. I am tired of the smell of her dying by inches, from the inside out, as her body consumes itself.

I am tired of doctors telling me there is nothing anyone can do, that I just have to keep loving her. As if my love for her does not already fill my heart. As though my every waking moment is not concerned with finding a way to save the life of my child, my child, who tells me she doesn't care if she lives or dies.

I am tired of trying to plan my future while my daughter's withers in front of me.

What makes me the weariest is pretending that everything is fine, that this way of living day to day, terrified of losing her, is acceptable to me. I do not find this acceptable at all, not for my family, not for my daughter, and

not for me.

Wound throughout my weariness is my anger, deep and thundering whenever it breaks the surface. My anger is directed to those few Fashion Gods who have decided that all clothing looks best on six-foot-tall androgynous women with hollow eyes and cheeks and no discernible breasts or hips.

And it is unfathomable to me that our society has accepted this as right and normal, and that all women in some way aspire to look this way.

We accept that to be a woman and appear in movies or on television, you must be stick-thin. We accept that certain groups of female athletes must be thin far beyond their healthy norm.

We ignore the models and stars and athletes who have gone public with their eating disorders and the pressures forced upon them to be perfect. We continue to admire their thinness instead of concentrating on their talents, criticizing any little weight gain as though it is some type of personality flaw.

And so I call upon the Gods of Fashion, and the Gods of Sport, to come down from their clouds of irresponsibility and finally allow girls and women to have the bodies they are meant to have, womanly bodies with shape and curve, strength and size.

It would be so simple for the Gods to make things right. It could happen as early as the next runway show in Paris, the next movie made in Hollywood, the next Olympics.

Let the Gods learn to celebrate each person's body and soul for what it truly is and thereby allow all of us the same right.

We live in a strange society, we let our female children try to force themselves into moulds impossible to fit. We tell them they are imperfect every time we allow them to watch television or look at a magazine, criticize the bodies of famous women or even our own.

We tell them by our actions that they must not look quite right, either, and that this makes them ugly, unworthy of love.

I find it heinous that we have allowed this to happen, and I do not know why we continue to allow it to go on. Why do we allow the Gods to dictate our children's lives? What are we willing to do to make the Gods stop?

My own daughter may yet recover; 78 percent of anorexics do not die.

And I am well aware that societal pressures are only one of the myriad causes of eating disorders — others are personality-driven or remain unknown.

But I also passionately believe that eating disorders can be greatly reduced by early education about positive body image and acceptance of one's self.

Let us teach our children not to worry so much about their perceived visible flaws as decreed by the Gods, and concentrate instead on their abilities to do and make and see wonderful things in their lives.

I want to see my self-starved child turn her back on the Gods, and get on with the business of doing the great things her spirit was made for.

I only pray that she will survive long enough to learn how to take her life back and live it her own way, allowing her precious light to shine from a body that has somehow become, not perfect, but perfectly acceptable to her.

Patrice Skuegard is a Winnipeg mother of two grown daughters.

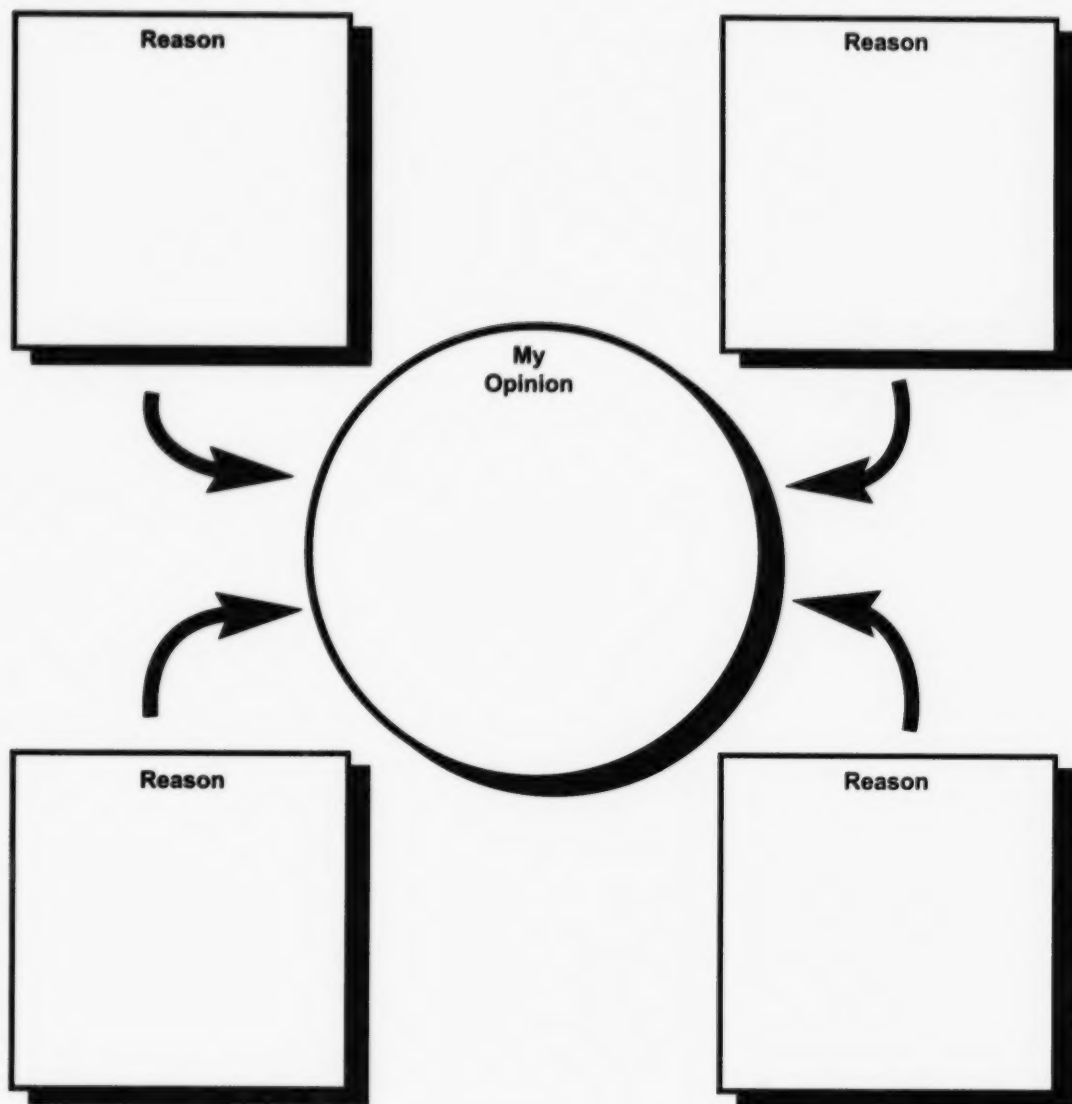


Many fashion designers have decided that clothing looks best on six-foot-tall women with hollow eyes and cheeks.

The View From Here is open to anyone who wants to tell us a story. E-mail your first-person submissions — no longer than 800 words, please — to theview@freepress.mb.ca. Due to the volume of submissions, we will only respond to those chosen for publication.



Graphic Organizer: My Opinion





Topic 6B
**When Sport
Becomes
Unhealthy: Winning
at All Costs: Doping**

(1 lesson)

This lesson focuses on the history of drug use in professional sport. Students will read and analyze a poem, discuss motivations for using drugs, fill in and add to a timeline by listening for specific information, and research and write a 250- to 300-word report on a specific drug. Some of the academic tasks are: deducing the meaning of unfamiliar words and word groups, understanding

relations between parts of a text through lexical and grammatical cohesive devices, listening critically, writing a report, extracting salient points to summarize, explaining, quoting, and citing sources.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.6 Interpret a range of texts...

SLO 4.2 Communicate effectively...

SLO 6.1.5 Use selective attention...

SLO 6.2.12 Use inferencing...

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.1.3 Use developing control of grammatical features...

SLO 4.4 Manage group action...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Sequence 1

Activation

Step 1: Distribute Handout 1-31: "The Sprinters." Students read the poem out loud with a partner. As a class, students discuss what the poem means, guided by the following questions: What is the central extended metaphor? What is personified? What is being compared to what? How does the poem express the desire of all athletes? Of the fans? What other literary devices does the poet use to make her point? (C)

Language Features

Vocabulary

Action verbs and phrases describing runners:
pummeling, pistoning, smash, outpace, runs, streaks away
tireless, hard grace-driven stride

Words and phrases describing time: the beat, in time's face, smash the ticking glass, mocks the clock, etc.

Pronunciation

Specific sounds: pl, th, third person s, r, str, gl, long e, l, gr, dr, cl, br
linkage

Step 2: Distribute and introduce Handout 1-32: "Anticipation Guide: Ethics in Sport." Explain the continuum scale. Students answer all the questions individually. (I) In triads, students follow the directions on the anticipation guide. (E). Once consensus is reached, the speaker for the group responds. Compare the responses given. (C)

Language Features

Discourse Features

Expressions to reach consensus: to agree, to disagree, to interrupt, to add information, to question, to summarize, etc.

Student Learning Tasks

With a partner, read the poem out loud, focusing on meaning, stress, rhythm, and pronunciation. (P)

Individually, answer all of the questions on

Handout 1-32: "Anticipation Guide: Ethics in Sport." (I)

In triads, work through the guide to come to consensus, and report to the class.

Teacher Notes and References**Handout 1-31: "The Sprinters"**

A mini-lesson on poetic devices may be timely here. Help the students work through the extended metaphoric comparison.

Students will also see time personified here.

**Handout 1-32: "Anticipation Guide: Ethics in Sport"**

Outcomes

SLO 1.3 Develop and express a personal position...

SLO 2.1.3 Use developing control of grammatical features...

SLO 4.3 Use clear respectful language...

SLO 5.1 Identify common themes and symbols...

SLO 5.4 Show understanding of the effect of cultural background...

SLO 4.6 Respond to and critique...

SLO 6.1.2 Use organizational planning...

SLO 6.2.7 Use elaboration...

Instructional and Learning Sequence

Step 3: Discuss the following question: What would make you take drugs or do something illegal to win? Money? Fame? Threats? Pressure and stress? None of these things? (C)

Language Features**Structures**

Expressions needed to answer the questions:

conditional adverbs/adverbials—if, even if; concessive adverbials—even though, despite, in spite of, although, etc.; modals—might, would, could, etc.; as negative expressions—wouldn't, couldn't, might not, shouldn't, would never, could never, should never, etc.

Step 4: Ask students if they know of athletes who take drugs to enhance performance—either amateur or professional. A variety of names may come up. (C)

Sequence 2

Students may be surprised to learn that drug use in sport has gone on for thousands of years. (Include the interesting fact from the Teacher Notes and References column. Students may want to comment on this and share similar stories from their own cultures.) (C)

Tell students they will be hearing many historic events about drug use and testing in sports. Ask students to draw a horizontal line (timeline) in their notebooks.

Student Learning Tasks

Discuss the question: What would make you take drugs or do something illegal to win? Money? Fame? Threats? Pressure and stress? None of these things? (C)

Name athletes who you know take drugs.

Assignment

In your notebook, create a timeline for **Handout 1-34**: "Listen and Label: Landmark Events in Drug Testing." Mark the timeline starting with "Ancient Times," and then jump to 1880, marking the line every decade until the present. The teacher will create a master timeline on chart paper marked the same way. (C)

Teacher Notes and References



This is a good opportunity to review the use of "even," "even though," "even if," "even when"; as these expressions often cause problems for EAL students who use the word "even" by itself when adverbials such as "even though," "even when," and "even if" are required.



Cultural Opportunity: Make sure you discuss the Ben Johnson scandal at the Seoul Olympics, 1988. A video clip (length-1:38) about the scandal and the effect on Canadians can be found at <http://archives.cbc.ca/294i.asp?IDCat=41&IDDos=106&actProf=158&IDLan=1>.



Handout 1-33: "Pictures of the Ruins of Ancient Olympia"

Handout 1-34: "Listen and Label: Landmark Events in Drug Testing"

Create a master timeline on chart paper marked the same way.

Interesting Fact: In the Ancient Olympics, athletes had to take an oath swearing to be honourable. They were threatened with castration if they were caught cheating. At Olympia today, one can find the remains of Cheaters' Row—a row of broken statues. Centuries ago, this row contained the likenesses and names of athletes caught cheating, a tremendous dishonour for the athlete, his family, and the town from which he came (which was also named in Cheaters' Row). Further personal punishment was castration. See **Handout 1-33**: "Pictures of the Ruins of Ancient Olympia" for pictures.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 2.2 Use several visual techniques...

SLO 6.1.3 Use directed attention...

Instructional and Learning Sequence

Listen and Label Activity

In this activity, students listen to a text about drug testing read by the teacher. As the teacher reads, students listen for and attach important events to a master timeline chart at the date where they belong.

Read Handout 1-35: "Teacher Resource: Listen and Label: Landmark Events in Drug Testing" as students complete the activity in Handout 1-34.

Explain the directions. The directions for the activity are written on the sheets containing the facts to be given to the students. (E) Hand out an equal number of the event cards required to fill in the timeline to each student. Pre-teach the most important vocabulary words on the cards. Next, begin reading Handout 1-34. (E) As his or her fact is read, each student will tape it to the master timeline at the appropriate year. Read the article twice if necessary. (I)

After this master timeline is finished, the class will have a visual record of important events concerning the abuse of drugs in sport from ancient times until 1999.

Alternate Instructional Strategy: If students are very capable active listeners, you might want to divide them into quads and begin the activity by reading the information for the timeline once without handing out or using the cards. The students try to get down as much information as they can on their own personal timelines. (I) Have students check with a partner and add all the information recorded in their quad. (E) Then, you could hand out the cards and read the article again to fill out the master timeline. Ask students to add to or correct information on their individual timelines from their first try. (I)

Language Features

Vocabulary

equivalent, susceptible, corruption, competitive, concoctions, tri-methyl, amphetamines, stimulant, strychnine, steroid, injectable, aqueous testosterone, amphetamines, nicotinyl tartrate, bans, commission, pentathlete, tested positive, urine testing, on a large scale, anabolic steroids, caffeine, institutes, transfusions, muscle-fuelling, perception, fringe, discarded, leaks, technical difficulties, high resolution mass spectrometer, sullied, supplement, violation, prohibited, banned substances

Structures

listening for dates and times (review): In + month, In + year, In + season, etc.; On + day, On + date, etc.; At + time, etc.

Student Learning Tasks

Transfer the information to your own personal timelines and use the reading to check and make sure that the facts are recorded in the appropriate places. (I)

Alternative Task

In quad groups, listen and take notes on your personal timeline as the teacher reads the information.

- Check with a partner and add all the information recorded in their quad.
- Add to or correct information from your first try on your timeline. (I)

Teacher Notes and References

Handout 1-34: "Listen and Label: Landmark Events in Drug Testing." This sheet

contains the landmark events in the reading, minus dates of occurrence.

Handout 1-35: "Teacher Resource: Listen and Label: Landmark Events in Drug Testing"



Before the class you must transfer each fact to an index card or a small piece of Bristol board. After the activity, collect these to be reused with another class.



Internet resources: Academic Word List at: <www.vw.ac.nz/LAS/div1/awl/>

Compleat Lexical Tutor at: <www.lextutor.ca>

Cut out the facts or prepare the index cards before the activity starts. Shuffle them and put tape on each so they will stick to the chart.

Choose 10 or so new, more common academic vocabulary words on which to focus. You may want to create an exercise to pre-teach these. (Some words are included in the vocabulary list.) In selecting the academic words to focus on, you may wish to refer to the Academic Word List or the Vocabulary Profiler found at the Compleat Lexical Tutor (online). See the "Resources for Building Content-Based Language Lessons" section for descriptions of these resources.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.7 Evaluate a given text...

SLO 3.2 Develop and implement a plan...

SLO 4.6 Respond to and critique...

SLO 6.2.1 Use resourcing to access...

SLO 6.2.4 Use note taking...

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts...

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.1.2 Use standard Canadian spelling...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.2 Use several visual techniques...

SLO 3.3 Quote from or refer to sources...

SLO 5.7 Select and present ideas...

SLO 6.1.2 Use organizational planning...

SLO 6.2.4 Use note taking...

SLO 1.2 Respond to texts...

SLO 2.1.2 Use standard Canadian spelling...

SLO 1.3 Develop and express a personal position...

Instructional and Learning Sequence

Note that the timeline is incomplete. Have the students work in pairs to find landmark events in drug use and testing since 1999. Students use the Internet or print sources, come to consensus as a class, and record the facts on the master timeline. (C)

Language Features**Vocabulary**

names of athletes/athlete competitions

names of drugs

Sequence 3**Writing Assignment**

Discuss the homework writing assignment with the class. The assignment is to choose one drug mentioned, research it, and write a one-page (250 to 300 words) report about how the drug works. Review the points listed in the Assignment column.

Students could present their research orally to the class or hand it in. If you choose an oral presentation, students should create a graphic organizer based on the points researched. During the presentation, students should take notes. Both presentations and listeners' notes could then be evaluated. (I) and (C)

Language Features**Structures**

appropriate use of tense, active voice

Discourse Features

paragraph formation, definition patterns from previous lessons, appropriate discourse markers

Academic Language Functions

explaining, describing

Sequence 4**Roundup**

(Suggestion) Include response prompts to discuss today's lesson. Write prompts on the board or have students choose some from the main list in Appendix 10: Response Prompts. Some examples of prompts might be: "I am surprised by..., I wonder why..., It seems unreasonable that..., Given that..., why would..., " et cetera. Additional examples of response prompts are provided in Appendix 10.

Students should respond to three prompts; they must use five new vocabulary words and three events from the timeline.

Student Learning Tasks

Research and record facts in note form. (P) As a class, compare facts. Choose appropriate facts to be recorded on the master timeline. The facts should meet the criterion suggested by the title "Landmark Events in Drug Testing." Consensus must be reached. (C)

Writing Assignment (Homework)

Choose one drug mentioned, research it, and write a one-page (250 to 300 words) report about how the drug works. Create a graphic organizer for planning, and address the following points:

- name of the drug
- type of athlete who would use this drug
- the reason this drug is used (does it build muscle, mask pain, stimulate the body, et cetera?)
- how the drug is taken
- the way the body uses the drug
- any side effects
- how reliable the testing is for this drug

Use at least five verbs from the verb list in the appendix. (I)

Respond to three prompts from **Appendix 10: Response Prompts**, using five new vocabulary words and three events from the timeline.

Teacher Notes and References



Appendix 8: How to Evaluate a website



Remind students to use reliable websites and cross-reference their information if you are not providing a resource list. Refer students to the How to Evaluate a website appendix. Alternately, you may want to provide a list of resources from which the students can choose.



Appendix 9: Verbs Used in Academic Tasks Across the Curriculum

Information about performance-enhancing drugs can be found at: "How Performance-Enhancing Drugs Work" at www.howstuffworks.com/athletic-drug-test.htm/printable from the general site "How Stuff Works."



If oral presentations are done, make sure that classmates listen actively and fill in a graphic organizer with the seven headings addressed in each report at the top of columns. Students can write notes under each heading for each presentation.



Appendix 10: Response Prompts

The Sprinters

By Lillian Morrison

The gun explodes them
Pummeling, pistoning, they fly
In time's face.
A go at the limit,
A terrible try
To smash the ticking glass,
Outpace the beat
That runs, that streaks away
Tireless, and faster than they.

Beside ourselves,
(It is for us they run!)
We shout and pound the stands
For one to win
Loving him, whose hard
Grace-driven stride
Most mocks the clock
And almost breaks the bands
Which lock us in.



Source: <www.experienceorigins.com/docs/sports4.pdf>.



Anticipation Guide: Ethics in Sport

Rate each statement according to the Strongly Agree/Strongly Disagree continuum and explain your choices. You may be asked to write your reasons on a separate sheet of paper. Then, in your group, discuss each statement; you must reach consensus in your ratings. (Optional: ask two people who are over 19 and not in your high school to rate these statements.)

1. People will do whatever is necessary to win.

☐ strongly disagree ☐ disagree ☐ depends ☐ agree ☐ strongly agree

2. Competition is healthy: it offers athletes a way to measure their success.

☐ strongly disagree ☐ disagree ☐ depends ☐ agree ☐ strongly agree

3. Ambition is good: it helps push athletes to work toward accomplishing their goals.

☐ strongly disagree ☐ disagree ☐ depends ☐ agree ☐ strongly agree

4. It is impossible to be ambitious and maintain one's integrity.

☐ strongly disagree ☐ disagree ☐ depends ☐ agree ☐ strongly agree

5. Pressure is often a factor when people cheat to win.

☐ strongly disagree ☐ disagree ☐ depends ☐ agree ☐ strongly agree

6. The desire to win is stronger than the desire to be honourable.

☐ strongly disagree ☐ disagree ☐ depends ☐ agree ☐ strongly agree

7. It is okay to cheat as long as one does not get caught.

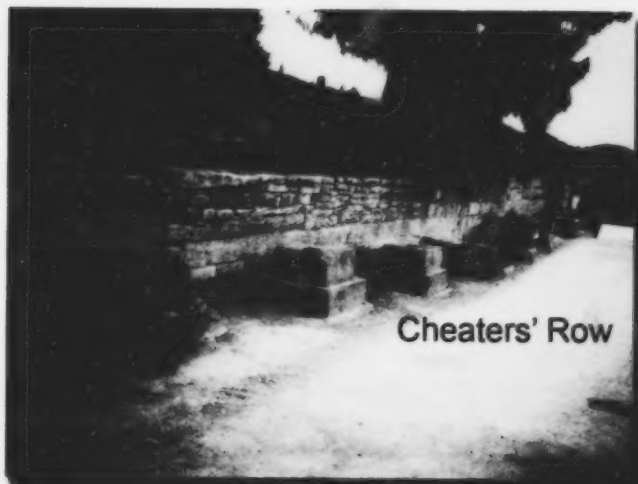
☐ strongly disagree ☐ disagree ☐ depends ☐ agree ☐ strongly agree

8. Professional sport, integrity, and fair play all go together.

☐ strongly disagree ☐ disagree ☐ depends ☐ agree ☐ strongly agree



Pictures of the Ruins of Ancient Olympia



Cheaters' Row



Olympia Ruins



Stadium



Listen and Label: Landmark Events in Drug Testing

Instructions:

Create a large timeline representative of the times mentioned in the article, marking off decades from 1885 to the present. Leave a section at the beginning of the timeline for landmark events in drug use long ago. Label this section "Ancient Times."

Cut out each piece of information below. Mix them up and give one piece of information to each student in the class. The teacher will read out the article, and the students will place the information at the appropriate spot on the timeline.

An Olympic medal was worth the modern-day equivalent of about U.S. \$500,000. These large awards led to a professional class of athletes who were susceptible to corruption. Some tried to get competitive advantage, using concoctions of mushrooms and plant seeds. One reason for discontinuing the ancient Games was drug use.	Anabolic steroids are added to the IOC's banned list.
Ancient Roman wrestlers used special mixtures of herbs to improve their performance.	Caffeine and testosterone are added to the IOC's banned list.
A favourite mixture among ancient Egyptian athletes is said to have been the rear hooves of the Abyssinian ass, ground up, boiled in oil, and flavoured with rose petals and rosehip.	Pan Am Games, Caracas, Venezuela: No drug testing had been announced. When a German doctor sets up a testing lab, many U.S. athletes leave without competing, and 19 athletes fail tests. The U.S. Olympic Committee immediately institutes testing for the next Games in Los Angeles.
A cyclist named Linton dies of an overdose of trimethyl, becoming the first recorded drug death in sports.	Before the Olympics, a third of the 24-person U.S. cycling team receives transfusions to load their blood with muscle-fuelling red cells. The U.S. team wins a record nine gold medals. This "blood doping" is discovered months later (and is now banned). On the last day of the competition, five to nine positive tests are lost, and officials say the results were stolen or shredded.
Mass-produced amphetamines become the athlete's stimulant of choice, replacing strychnine.	Seoul Olympic gold medal sprinter, Ben Johnson of Canada, tests positive for a steroid, and loses his gold medal. The public perception that drug use occurs only in fringe "muscle" sports like weightlifting is destroyed.
The first steroid appears on the market, an injectable liquid called aqueous testosterone.	Summer Games, Atlanta: A few positive tests are discarded by the IOC. When news of the discarded tests leaks, the IOC explains that it lacks confidence in the results from the high-resolution mass spectrometer they use to conduct testing.
Soviet athletes allegedly use anabolic steroids.	The entire sport of cycling is sullied as prominent teams, riders, and trainers are thrown out of the Tour de France for drug violations. Others quit in protest.
Several competitive cyclists die suddenly, including Knut Jensen of Denmark, who died after taking amphetamines and nicotinyl tartrate. This results in the first cries for drug bans and testing.	World Swimming Championships: Chinese swimmers try to take growth hormone to Australia.
British cyclist Tommy Simpson drops dead during a televised stage of the Tour de France. The International Olympic Committee establishes a commission to study doping.	The IOC announces that blood testing may be introduced at the Sydney Games to supplement urine tests.
Mexico City: Olympics drug testing begins. Only one athlete is caught—a modern pentathlete who tests positive for alcohol.	
Munich Olympics: Urine testing on a large scale occurs for the first time. Seven athletes test positive for banned drugs.	

Teacher Resource: "Listen and Label": Landmark Events in Drug Testing

Most people assume that the abuse of drugs by professional athletes in events such as the Olympic Games is a modern occurrence, but this is not true. Competition, recognition, and victory, with its financial and personal rewards, have always been motivational factors. Ever since the ancient Olympic Games of Greece, there have been records of doping by elite athletes bent on reaping the accolades of winning in their fields.

A number of ancient civilizations used performance-enhancing drugs. An Olympic victory in ancient Greece was worth the modern-day equivalent of half a million dollars. The large rewards led to a professional class of athletes who were susceptible to corruption. Some tried to gain any competitive advantage, using concoctions of mushrooms and plant seeds. One of the reasons for discontinuing the ancient Games was drug use. Ancient Roman wrestlers used special mixtures of herbs to improve their performance. "A favourite mixture among ancient Egyptian athletes is said to have been the rear hooves of an Abyssinian ass, ground up, boiled in oil and flavoured with rose petals and rosehip" (Brukner, 1). Clearly, drug abuse is not just a problem associated with athletes of today.

The use of drugs has also contributed new words to our language. Norwegian warriors called "the Berserkers," used psychoactive mushrooms to give them strength and make them brave. The effects of the mushrooms made them act wildly or "go berserk" as we would say today. Indigenous South African tribes used a local type of alcohol called "dop" as stimulant. Today we use the word "doping" to refer to the use of chemicals to enhance athletic performance. Some words certainly have interesting origins!

During the centuries, there have been many examples of drug use and abuse. Reports of doping were common in the nineteenth century. In 1886, an English cyclist named Linton died of an overdose of trimethyl. His death was the first recorded drug death in sports. Until the 1930s, the performance-enhancing drug used by many athletes was strychnine. However, in the thirties, mass-produced amphetamines became the athlete's stimulant of choice. In the 1940s, the

first steroid appeared on the market. It was an injectable liquid called aqueous testosterone. Muscle and strength-building steroids are still a cheater's best friend today because they are so affordable. Anabolic steroids were first alleged to have been used by Soviet athletes in the 1952 Olympics. Their use was confirmed two years later by one of the Russian team physicians. The use of anabolic steroids, especially by power athletes, became rampant in the late 1960s and 1970s.

Different kinds of doping were reported in the sixties. Several competitive cyclists died suddenly in the early 1960s. Included in this group was a famous cyclist from Denmark, Knut Jensen, who died suddenly after taking amphetamines and nicotiny tartrate at the 1960 Olympics. These drug-related deaths caused the first outcry for drug bans and testing. Amid these cries for tests and bans, in 1967, a British cyclist named Tommy Simpson dropped dead during a televised stage of the Tour de France. As a result of these deaths and alleged drug use at the 1964 Tokyo Olympics, the International Olympic Committee established a medical commission to study doping and to ban the use of pharmaceutical agents to enhance performance.

In 1968 at the Olympics in Mexico City, drug testing began. Only one athlete was caught—a modern pentathlete who tested positive for alcohol. In the future, there would be many more tests and many more positive results.

In the 1970s and 80s, a number of new drugs were added to the banned substances list and many drug scandals occurred. In 1972 at the Munich Olympics, urine testing on a large scale occurred for the first time. Seven athletes tested positive for banned drugs. In 1975, anabolic steroids, such as androstenedione, were added to the IOC's banned list. Later, in 1982, caffeine and testosterone were also added. At the Pan American Games held in Caracas, Venezuela, in 1983, no drug testing had been announced. After a German doctor set up a testing lab, many U.S. athletes left without competing, and nineteen athletes failed tests. The U.S. Olympic Committee immediately instituted testing for the 1984 Olympic Games in Los Angeles. Just before the

(continued)

Teacher Reference for "Listen and Label" (continued)

commencement of these Games, a third of the twenty-four person U.S. cycling team received transfusions in a Carson, California, hotel room to load their blood with muscle-fueling red cells. This "blood doping" is now banned. At the Games, the U.S. cycling team won a record nine gold medals. The doping was only discovered months later. On the last day of competition, five to nine positive tests were mysteriously lost. Officials concluded that the results were stolen or shredded. Finnish distance runner Marti Vaino also tested positive for anabolic steroids as a result of reinfusing blood extracted some time earlier. In the 1998 Seoul Olympics, the pride of Canada, gold medal sprinter Ben Johnson, tested positive for an anabolic steroid and focused the whole world on the seriousness of the drug problem in professional sports. His disqualification and lost medal resulted in the disappointment of a whole nation and the destruction of the public perception that drug use only occurred in "fringe muscle sports" like weight-lifting. Just how widespread and pervasive was the use of banned substances?

With the 1990s came concerns about mass coverups and lies about drug tests—a concern that still exists today. At the 1996 Summer Olympic Games in Atlanta, Georgia, a few positive tests on the last weekend of the competition were discarded by the IOC. When news of the discarded tests leaked, the IOC explained that it was concerned about "technical difficulties" in the drug-testing machinery used—a high-resolution mass spectrometer. In 1998 the entire sport of cycling was sullied, as prominent teams, riders, and trainers were thrown out of the Tour de France for drug violations connected with use of the drug erythropoietin. Others quit in protest. At the 1998 World Swimming Championships, Chinese swimmers were exposed for trying to bring human growth hormone through customs into Australia. In the summer of 1999, the IOC announced that blood testing might be introduced at the Sydney Games in 2002 to supplement the urine tests. However, mandatory tests for two powerful drugs, erythropoietin, or Epo, and hGH, or human growth hormone, believed to be widely used by athletes were not reliable enough by the commencement of the Games. Unfortunately, the crux of the problem seems to be that the commitment to find drugs does not seem to be there.

Sadly, there is some skepticism about the integrity of the athletes, trainers, doctors, judges, and committees involved with elite sporting events such as the Olympics. Not only are new drugs being discovered, new ways of "passing" tests are also on the rise. Some doctors and trainers are ready to help athletes find and use their drug of choice. According to Donald Catlin, the head of the UCLA lab that has handled drug testing at several Olympics, "We have to concede that, if [an athlete] knows what [he or she] is doing [he or she] can go right through and around these things. If you turn my hat around and ask me to figure out how to cheat, my gosh, you'd never catch me."

Drug tests are certain only in the detection of stimulants, such as amphetamines, and excessive caffeine taken on the day of the test. Athletes are relying on far more powerful drugs, as well as masking agents that cover up the appearance of drugs in their systems. It seems that cheaters are alive and well in this millennium.

For more information, visit <www.mapinc.org/drugnews/v99.n1037.a08.htm> and "Drugs in Sport" at <www.sciencevictoria.org.au/ord1001.htm>.



Topic 7
**Culminating
Activity**

(1 lesson)

This is the culminating activity, introduced at the beginning of the module. Students practise research skills, note taking, summarizing, citation, visual presentation, and oral presentation.

Outcomes	Instructional and Learning Sequence
SLO 2.2 Use several visual techniques... SLO 3.2 Develop and implement a plan for researching... SLO 3.1 Seek, organize, and synthesize information... SLO 4.1 Use language to encourage... SLO 4.7 Use the English language... SLO 1.5 Examine and interpret various visual media... SLO 6.1.1 Use advance organization... SLO 6.1.2 Use organizational planning... SLO 6.1 Students will know and use... SLO 6.1.8 Use self-evaluation ... SLO 6.3.1 Use questioning for clarification...	Sequence 1 Poster Presentation of a Chosen Sport Discuss Handout 1-36: "Poster Presentation Evaluation Rubric." (This handout was distributed in Module 1, Topic 1, Lesson 1.) Explain the poster assignment in which students prepare posters on an Olympic sport, following the guidelines given in Topic 1. They may illustrate the posters and provide a list of references. (P) When complete, display the posters around the room. Have one person from each team present his or her poster by standing by it while another person circulates and collects information by reading and asking questions. Reverse roles. Students can be given a short quiz on the information collected from the presentations. (C) (P) Roundup Assignment Students write a self-evaluation in their Learning Logs or journals, that answers the questions listed below. What did they like about their work? How did they plan it? What did they have trouble with? What would they do differently next time? (I)

Student Learning Tasks**Assignment**

Prepare a poster in pairs, a group, or individually on an Olympic sport, following the guidelines given in Module 1, Topic 1, Lesson 1. Illustrate the poster and provide a list of references. (P)

Assignment

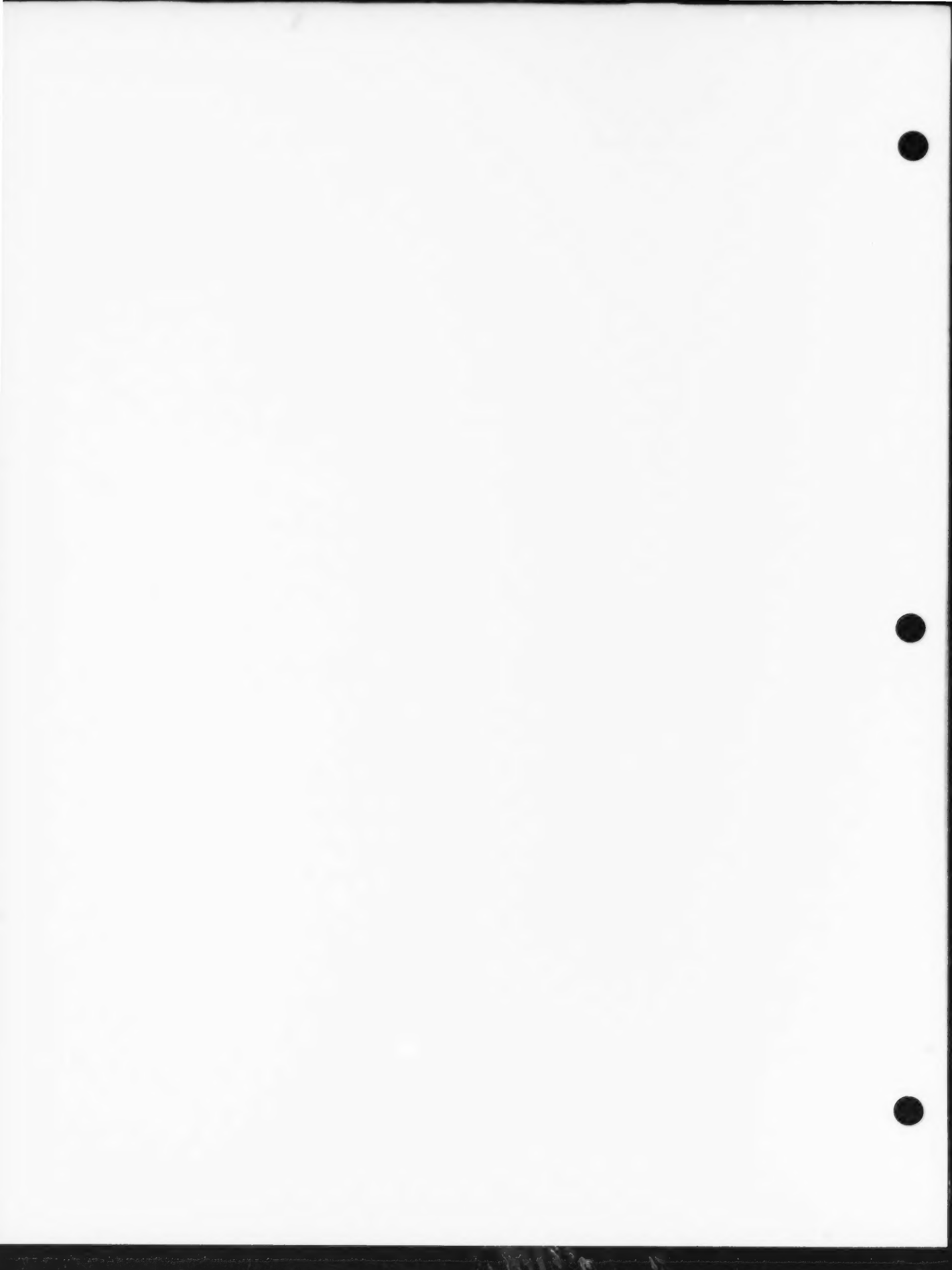
Write a self-evaluation in your Learning Log by responding to four questions:

- What did you like about your work?
- How did you plan it?
- What did you have trouble with?
- What would you do differently next time? (I)

Teacher Notes and References**Handout 1-36: "Poster Presentation Evaluation Rubric"**

Students should be given time in class to finish their posters. Stress the importance of the best possible language and visual design, since this is for their classmates to view.

This **culminating activity** will cover many of the language features that were the focus of the preceding topics.

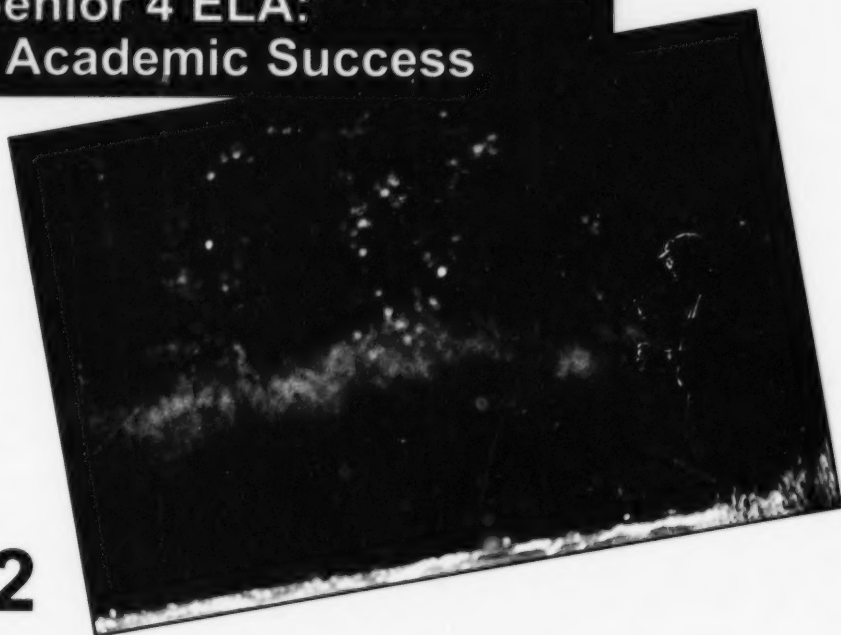


Poster Presentation Evaluation Rubric

	3 Excellent	2 Adequate	1 Needs improvement
Information is accurate and thorough.	Relevant, accurate, and well-developed	Mostly relevant and accurate	Not relevant or inaccurate
English grammar and spelling are accurate.	Minor isolated errors in grammar and/or spelling	Few errors in grammar and/or spelling	Frequent errors in grammar and/or spelling
Vocabulary used is appropriate to the topic and sports in general.	Effective word/idiom choices and usage that enhance meaning	Occasional errors of word/idiom choices and usage that do not obscure meaning	Inappropriate or incorrect word/idiom choices and usage that obscure meaning
The poster is attractive in terms of neatness, layout, and design.	Well-organized, effective, and relatively sophisticated design	Appropriate design that aids meaning	Ineffective design or sloppy or incomplete work
The presenter is able to speak about the material fluently and with accurate pronunciation.	Presentation was effective and clear	Presentation was comprehensible with some errors in pronunciation	Presentation was hard to follow, was difficult to comprehend, and included frequent mispronunciations



Senior 4 ELA: EAL for Academic Success



Module 2

The Environment

This module uses topics related to the environment to develop relevant vocabulary and language structures for discussing controversial issues. As students read short articles, cartoons, charts, a timeline, and graphs, they will take notes, summarize, describe, classify, explain changes, compare, and make inferences and logical deductions. Students listen and read critically, follow arguments, write to support a viewpoint, and synthesize information from various sources. Language features include: additional definition patterns, expressions for discussion, expressing personal opinion, comparison and contrast, vocabulary to describe graphing and charts, transition markers, paragraph organization, illustration, and citation. Writing tasks include: lists, a short comparison paragraph, research reports, an essay to support a viewpoint, and an oral presentation.

Module 2

The Environment

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Assessment for Learning

Module 2: The Environment**Topic 1: Beginnings**

Assessment Target: GLO 2: Students' ability to know and use discourse features that indicate comparison and contrast

Assessment Task: Students produce a paragraph that summarizes the chart they created comparing traditional Dene values and culture to contemporary Northern American culture. Collect writing samples and check for appropriate use of compare and contrast transitions.

Topic 2A: Global Warming: One of the Problems

Assessment Target: GLO 1: Students' ability to create and use graphic organizers to summarize the main points they gleaned from the texts provided

Assessment Task: Present and explain the graphic organizers they created. Use a student observation matrix to record students' performance and areas of success and difficulty.

Topic 2B: Kyoto: A Controversial Solution to Global Warming

Assessment Target: GLO 2: Students' knowledge of and ability to use tone and gambits to express a personal position for formal purposes

Assessment Task: Students write a letter to the editor expressing their position regarding the implementation of the Kyoto accord. Check the student writing samples for use of adverbs to indicate tone and use of gambits extracted from the texts.

Topic 3A: Water: The Problem

Assessment Target: GLO 3: Students' knowledge of summary genre and quotation and documentation format; ability to produce a summary from a researched topic, using correct quotation and documentation format

Assessment Task: Students research a water conflict and write a summary of the problem, possible solutions, and potential developments regarding this issue in the future, using new vocabulary and relevant statistics. Compare the student writing samples with the original articles to see if they have captured the main ideas, used their own words, included new vocabulary and statistics, and used correct documentation.

Topic 3B: Clean Water: Some Solutions

Assessment Target: GLO 4: Students' ability to communicate effectively to work with others in sharing information from academic texts

Assessment Task: Students complete a Jigsaw activity sharing information from several articles to answer focus questions about solutions to water shortage problems. Observe students' interactions using a checklist of gambits and dispositions essential for group work.

Topic 4: Air Pollution

Assessment Target: GLO 1/2: Students' knowledge of and ability to use, with increasing control, organizational patterns and discourse features in subject-area texts

Assessment Task: Students write mathematical word problems using information in the readings. Students and teacher can assess for clarity of wording by solving the problems.

Topic 5: Greenhouse Gas Emissions

Assessment Target: GLO 2: Students' knowledge of and ability to use grammatical structures and discourse features to answer academic questions related to a study.

Assessment Task: Students complete an activity related to car emissions. Everything in the activity requires students to attend to imperative verbs used in many academic tasks. As students work through the activity, check their oral discussion and written answers to the questions for accurate interpretation and response to the different imperative verbs.

Topic 6: Endangered Species

Assessment Target: GLO 2: Students' ability to produce a summary from point-form notes

Assessment Task: Using information provided, students record essential information in point-form notes and then write a summary from those notes. Check writing samples for inclusion of main ideas in smoothly written sentences.

Assessment Target: GLO 3: Students' ability to research, organize, and present information to an audience

Assessment Task: Students research a species at risk and orally present their findings with the aid of a computer or poster presentation. Check oral presentation and visual aids for evidence of research, appropriate organization, and clear communication of ideas, using a teacher- and/or student-developed rubric.

Topic 7: Ecological Footprint

Assessment Target: GLO 3: Students' ability to synthesize information from multiple sources to form and support a position and to document sources accurately

Assessment Task: Students combine information from several articles to write a paragraph explaining the concept of "ecological footprint." Check writing samples for incorporation of more than one source and use of attributive tags.

Topic 8: Recycling

Assessment Target: GLO 6: Students' knowledge of and ability to use metacognitive, cognitive, and social affective strategies to plan for learning

Assessment Task: Working with a partner or a group, students predict content terms and concepts that might be tested in this module, along with the answers. The class can evaluate the likelihood of the items selected and the correctness of the answers.

Topic 9: Environmental Presentation

Assessment Target: GLO 3/6/2: Students' knowledge of and ability to use the English language to explore and manage ideas; to use learning strategies to enhance learning and communication; and to plan and produce accurate written, oral, and visual texts in a subject-area task

Assessment Task: Students research and present to the class a specific environmental problem in the form of a proposal to a public audience, supported by a computer or poster presentation. As students work through the module, monitor their progress, checking for use of research process and of language features covered in the module. Students also use a listening guide to peer-evaluate final presentations.

Portfolio

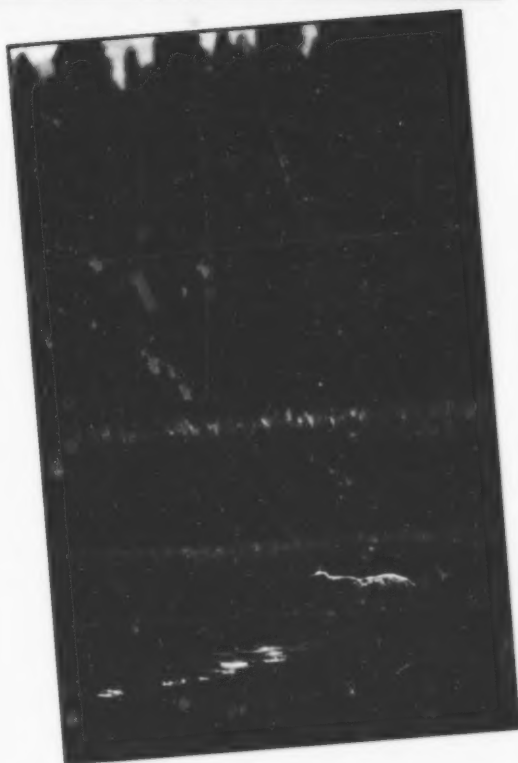
Item	Description
5	Topic 2B: Letter to the Editor regarding their position on the Kyoto Accord
6	Topic 4: Short text on role of the automobile in students' countries of origin
7	Topic 6: Summary from point-form notes
8	Topic 9: Videotape or printout of computer slides of environmental presentation
9	Student-selected journal entry

Assessment of Learning

Item	Description
The assessment focus for Module 2 is on researching, summarizing, and reporting information.	
1	Vocabulary test on academic vocabulary drawn from this module, including AWL words.
2	Topic 4 Assessment Target: GLO 2: Students' ability to produce a short text containing description and prediction, showing increasing control of grammatical structures and discourse features to achieve these functions Assessment Task: Students write a short description of the role of the automobile in their countries of origin, predicting the possible short-term and long-term effects of the automobile on their cultures and the environment. Check writing samples for organizational structure, targeted discourse features, and accurate use of conditional and future time structures.
3	Topic 5 (optional) Assessment Target: GLO 2: Students' knowledge of and ability to use organizational patterns, grammatical structures, and discourse features to produce a subject-area text Assessment Task: Students answer a comprehensive set of questions about the activity. Check writing samples for accurate interpretation of directing verbs, appropriate grammatical structures, and use of new vocabulary.
4	Topic 6 Choose one of the two assessment tasks.

Assessment of Learning (continued)

Item	Description
5	Culminating Project: Environmental Presentation The environmental presentation that occurs at the end of this module is an important evaluation item for this module. Criteria for Assessment: Using the assessment criteria provided in the topic and student input, develop a rubric for evaluating the students' performance.



Topic 1 Beginnings

(1 lesson)

This lesson introduces the relationship of world view to environmental practices through a First Nations story. Environmental vocabulary and problems are introduced. Students brainstorm using a “graffiti” technique, read for inference, compare and contrast

two sets of values, and retell a traditional narrative from their own culture. The final activity for the module, an oral presentation about an environmental problem, is introduced.

Outcomes	Instructional and Learning Sequence			
SLO 1.3 Develop and express a personal position in a variety of ways... SLO 2.2 Use several visual techniques... SLO 4.1 Use language to encourage... SLO 6.2.7 Use elaboration... SLO 6.2.8 Use imagery in the form of mental or actual pictures... SLO 6.3.2 Use co-operation	Sequence 1 Activation Introduce the term "graffiti" by explaining its use in Western culture. Let students talk about graffiti in their own cultures or country. Have students produce a graffiti poster on the idea of "environment." They can use dictionaries to help, but they should put their own thoughts about the topic on the poster. Students begin by thinking silently about the topic for one to two minutes, writing graffiti-style on their own paper. Put the poster paper on the wall. Write the word "environment" on it. Ask students to come up two or three at a time to add two responses to the topic anywhere on the poster. Students read the graffiti that others have written, and write again, responding to previous comments or adding new thoughts. After everyone has written, review the graffiti board together, using it as a springboard for discussion. Note any comments that refer to problems with the environment. Supply the specific vocabulary, as needed. What do students think cause these problems? <table border="1"> <tr> <td rowspan="2">Language Features</td> <td>Vocabulary</td> </tr> <tr> <td> graffiti, environment, horizontal, vertical, diagonal Names of environmental problems: e.g., pollution, global warming, deforestation, endangered/extinct species, consequence, ozone layer </td> </tr> </table>	Language Features	Vocabulary	graffiti, environment, horizontal, vertical, diagonal Names of environmental problems: e.g., pollution, global warming, deforestation, endangered/extinct species, consequence, ozone layer
Language Features	Vocabulary			
	graffiti, environment, horizontal, vertical, diagonal Names of environmental problems: e.g., pollution, global warming, deforestation, endangered/extinct species, consequence, ozone layer			

Student Learning Tasks

Talk about graffiti in your cultures or country. (C)

Produce a graffiti poster on the topic "environment" by:

- a) Thinking, then writing several responses using graffiti-style on your own paper.
- b) Adding two responses on the class poster.
- c) Reading the graffiti poster and responding to previous comments or adding new thoughts.
- d) Discussing environmental problems and the causes of these problems. (I) (C)

Teacher Notes and References

Photograph of graffiti (teacher-provided). Many examples of graffiti are available at

<www.graffiti.org>.

Poster-size paper, markers (teacher-provided)



Discuss the importance of preparation for studying a new or difficult topic. One strategy is to provide an overview of the topic to be studied and help students link new vocabulary or information with what is already known. The first activity in this lesson encourages this on an individual and group level.

Encourage students to write horizontally, vertically, diagonally, in capitals, in italics or interesting letters, and with illustrations and cartoons.

Leave the graffiti poster on display throughout the module.

The focus at this point is on activating ideas and introducing vocabulary, not on factual accuracy or analysis of environmental problems.

Outcomes

SLO 5.1 Identify common themes and symbols...

SLO 6.1 Students will know and use effectively metacognitive strategies...

SLO 6.1.3 Use directed attention...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

Instructional and Learning Sequence**Sequence 2**

Post map of Canada (teacher-provided).

Ask students if they know any stories or descriptions of the beginning of the world. Do the stories teach any lessons about the relationship between human beings and the natural world?

Introduce a First Nation (Dene) story of the beginning, "The Big Snow in the North Land." (See **Handout 2-1**: "The Big Snow in the North Land.")

- Locate Great Slave Lake on the map. Discuss the landscape and weather. Discuss the past or present way of life of the Dene people there: shelter, food, and challenges. Discuss how the people in the story completely depend on nature for survival.
- Explain that stories such as the one they will read were usually told by Elders, both to entertain and to teach important ideas. Introduce the animals in the story.

Language Features**Vocabulary**

shelter, tundra, lodge, canoe, black bear, caribou, fox, mouse, beaver, moose, lynx, duck, raven, ptarmigan

language used to describe Aboriginal peoples in North America (see Teacher Notes and References column)

Student Learning Tasks

Discuss stories about the beginning of the world.

Discuss landscape and weather in the North.

Teacher Notes and References



Map of Canada (teacher-provided)

Visuals of the Northwest Territories landscape in summer and winter; visuals of animals in story: black bear, caribou, fox, mouse, beaver, moose, lynx, duck, raven, ptarmigan (teacher-provided)

Handout 2-1: "The Big Snow in the North Land"



For more information, see:

Dene Ethnography at:
<www.sicc.sk.ca/heritage/ethnography/dene/index.html>

"The People of the Deh Cho" at:
<www.artcanadacarvings.com/people_of_the_deh_cho.htm>



Discussing old stories about the beginning of the world may elicit traditional stories or scientific explanations—both responses are appropriate.

The language that is used to describe specific ethnic and national groups is often changing and can be contentious. It may be helpful to introduce some language that is commonly used to discuss Aboriginal peoples in Canada and North America.

In general, indigenous peoples prefer to be called by their specific cultural name (e.g., Anishanabe) rather than a generic term such as Aboriginal. However, in Canada "Aboriginal" is intended to be an umbrella term that includes all indigenous groups, both status and non-status, Métis, First Nations and Inuit. "Status" Aboriginal peoples often wish to be recognized as a "nation" and prefer the term "First Nations." The terms "Indian" and "Native" were used extensively in Canada in the 1960s to 1980s but generally have been replaced by the term Aboriginal. However, these terms are still used extensively throughout the United States.

The word "Dene" comes from two words, "De," meaning flow and "Ne," meaning Mother Earth. This reflects the people's belief that they flow from Mother Earth and are a people of the Creator and the Creation. There are many distinct regional groups across northern Canada (including Manitoba), but they share a common ancestry.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 6.1 Students will know and use effectively metacognitive strategies...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 4.1 Use language to encourage...

SLO 5.6 Evaluate texts...

SLO 6.1.3 Use directed attention...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.3.1 Use questioning for clarification...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Present the following questions to direct student focus while reading the story:

- What was the problem the animals faced in the beginning? How did they try to solve it? What were the consequences?
- How does the relationship of the animals to each other change from the beginning to the end of the story?
- What caused this change?
- What warning is given about human beings and the environment?

Read the story aloud as students follow the written version. Check for basic comprehension as you read.

Language Features

Discourse Features

cause and effect

Learning Log: After listening/reading, students estimate how much of the story they understood (e.g., 75 percent) and record this in their Learning Log.

After reading, students discuss the focus questions with a partner or in a small group. Then they compare answers with the class.

Discuss: What is the purpose of this story? What ideas or values about nature, living things, the environment, and human beings does this story reveal?

Language Features

Discourse Features

Reporting phrases: according to...; the story said...

Opinion phrases: I think (that)...; In my opinion...

Volunteering phrases: I'd like to say (that)...; Can I answer that?

Student Learning Tasks

Listen and follow along to written version of
Handout 2-1: "'The Big Snow in the North Land' as told by the Dene People," looking for answers to the focus questions.

Learning Log: After listening/reading, estimate how much of the story you understood (e.g., 75 percent) and record this in your Learning Log. **(I)**

Discuss the focus questions with a partner or in a small group and compare answers with the class. **(P) (G)**

Discuss the probable purpose of this story and the ideas about the environment that it reveals.

Teacher Notes and References

Handout 2-1: "'The Big Snow in the North Land' as told by the Dene People" and/or recorded version



This form of self-monitoring should be done every week or so.

Outcomes

SLO 4.1 Use language to encourage...

SLO 4.2 Communicate effectively to work with others...

SLO 5.4 Show understanding of the effect of cultural background...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.3.1 Use questioning for clarification...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 2.3.3 Produce effective oral presentations...

SLO 6.1.4 Use functional planning...

SLO 6.2.2 Use repetition to imitate a language model...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.2.13 Use recombination...

Instructional and Learning Sequence

Use **Handout 2-2: "The Big Snow' Worldview Comparison Chart"** to compare the values and ideas in this story with those from modern North American culture, as students perceive it. Have students consider their own culture's values and discuss any changes that have occurred.

Language Features

Discourse Features

Compare/contrast transitions: compared to x; at the same time; similarly; however; in contrast; on the other hand; unlike x; even though; although

Optional Tasks

Optional Writing Task: Using the information from the previous chart, have students write a paragraph comparing the beliefs about nature demonstrated in the story with those of the modern industrialized world. (I)

Optional Oral or Writing Task: Have students retell a traditional story from their own culture, focusing on the beliefs or attitudes toward the natural world that the story reveals.

Student Learning Tasks

Using the chart on **Handout 2-2: “‘The Big Snow’ Worldview Comparison Chart,”**

- compare the values and ideas in the story with those from modern North American culture, as you perceive it.
- consider your own culture’s values and discuss any changes that have occurred.

Optional Writing Assignment: Using the information from the previous chart, write a paragraph comparing the beliefs about nature demonstrated in the story with those of the modern industrialized world. (I)

Optional Oral or Writing Assignment: Retell a traditional story from your own culture, focusing on the beliefs or attitudes toward the natural world that the story reveals.

Teacher Notes and References

Handout 2-2: “‘The Big Snow’ Worldview Comparison Chart”



The accuracy of students’ perceptions is not important at this point, but encourage them to think through the examples and possible effects.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 2.1.2 Use standard Canadian spelling...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 3.1 Seek, organize, and synthesize information...

SLO 3.2 Develop and implement a plan for researching...

SLO 3.3 Quote from or refer to sources...

SLO 4.1 Use language to encourage...

SLO 6.1.1 Use advanced organization...

SLO 6.1.4 Use functional planning...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.1 Use resourcing to access...

SLO 6.2.4 Use note taking ...

SLO 6.2.9 Use summarization...

SLO 6.2.13 Use recombination...

Instructional and Learning Sequence

Sequence 3

Culminating Activity

Introduce the culminating activity. Have students think of a specific environmental problem in their city or country and research the causes, effects/impact, and possible solutions. They will present their findings to the class as a part of a proposal to the authorities (some level of government) or to the public about ways to solve it. The final product will be a three- to five-minute oral presentation, using a computer presentation program or well-designed posters for visual support. Students may use the notes from the slide-show view of a computer presentation program, but they may not read from a full text. The presentation will be given at the end of the module.

Language Features

Vocabulary

Vocabulary and structures will be drawn from topics in the module.

Discourse Features

proposal format

computer-aided presentation

poster presentation

Student Learning Tasks**Assignment**

- a) Choose a specific environmental problem in your city or country and research the causes, effects/impact, and possible solutions.
- b) Present your findings to the class in a three- to five-minute oral presentation, using a computer presentation program or well-designed posters for visual support. Notes may be used but text should not be read.
- c) Prepare a proposal to authorities about ways to solve the problem.

Teacher Notes and References

The activity can be done individually or with a partner.

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 6.1 Students will know and use effectively metacognitive strategies...

SLO 6.2.9 Use summarization...

Instructional and Learning Sequence

Sequence 4

Roundup

Response Journal: Ask students to respond to the question: From an environmental perspective, what do you feel is the most serious problem facing our world today? Why?

OR

Ask students to describe what they believe should be the relationship between humans and animals.

Learning Log: Have students describe how they used the learning strategy of preview/linking in the activities in this lesson.

Student Learning Tasks**Teacher Notes and References****Assignment**

In a Response Journal, respond to the question: From an environmental perspective, what do you feel is the most serious problem facing our world today? Why?

OR

Describe what you believe should be the relationship between humans and animals.

Learning Log: Describe how you used the learning strategy of preview/linking in the activities in this lesson.



The Big Snow in the North Land as Told by the Dene People

Long ago, the animals and the birds and fishes along the shores of Great Slave Lake lived in peace and friendship. All spoke the same language at that time, when the world was new and people had not come out yet. No animal ate another animal. All lived on plants and leaves and berries.

One night in this long ago time, the darkness was very thick and snow began to fall. All night it fell. The night continued, so that it seemed never to have an end. The snow became deeper and deeper. Plants and bushes were covered and the animals had difficulty in finding food. Many of them died. At last their chief called a council of all the living.

"Let us send messengers to the Sky World," the council decided. "They will find out from the Sky People what is causing this long night and the deep snow."

So they sent a messenger—one member of every kind of animal, bird, and fish

that lived on the shores of Great Slave Lake. Those who would not fly were carried on the backs of those who could fly. So all reached the Sky World and passed through the trap door.

Beside the trap door stood a great lodge made of deerskins. In the lodge were three little bears. This was the home of Black Bear, an animal not on the earth at the time. Their mother, the cubs said, was in her canoe on the lake nearby; she had gone out to spear caribou. The animal people did not like the idea of Black Bear's spearing caribou, one of their own group. But they said nothing about it. Instead, they looked around the lodge. Hanging from the cross-bows overhead were some curious bags. "What are in those bags?" they asked the cubs.

At first the cubs would not answer. When asked again, they said slowly, "We can't tell you. Wait until our mother comes back. She asked us to stay here and watch them."

I wonder if those bags have something to do with us," the earth people wondered to themselves. So they asked the cubs again about the bags.

Pressed by their questions, the cubs finally told them.

"This bag contain the winds. That one contains the rain. This one, the cold. That one, the fog. This one—" But they would not say what was in the last bag.

"We dare not tell you about this one," said the youngest cub. "Our mother told us that it is a big secret. If we tell you what is in it, she will be angry when she returns and will spank us."

The visitors felt sure that the last bag contained the sunshine, and sunshine was what they wanted. So they left the lodge and held a council. They saw Black Bear landing her canoe on the far shore of the lake. Quickly they made a plan.

"Mouse, you go to Bear's Canoe and gnaw a deep cut in the handle of her paddle close to the blade. When you have finished your work, you signal to Caribou.

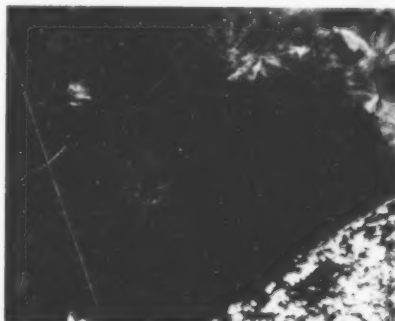
"Caribou, as soon as you get the signal, you jump into the lake and begin swimming. Before Black Bear gets close, swim ashore and run into the woods. The rest of us will hide until it is safe to take the bag of sunshine."

Before Fox hid himself, he put his head inside the lodge and said to the cubs, "Keep a lookout for the caribou. It may come near you here."

Mouse ran to the far shore of the lake and gnawed the paddle. As soon as she signaled, Caribou jumped into the water.

The cubs saw him and yelled to their mother. "Mother! Mother! Look at the caribou!"

(continued)



Source: <http://tigerlily_1.tripod.com/bigsnow.html>. Author unknown.

The Big Snow in the North Land (continued)



The earth people, watching from their hiding places, saw Black Bear jump into her canoe, seize the paddle, and begin to stroke as hard as she could. Caribou also watched as he swam. Soon the paddle broke, the canoe turned over, the Black Bear disappeared beneath the waters of the lake.

Caribou swam ashore, Mouse returned to her friends, and all the earth people ran into the lodge. They pulled down the bag they wanted, and in it they found the sun, moon, and stars. These they threw down through the trap door. When they opened the door, they saw that snow covered the tops of even the highest pine trees. While they watched, the snow began to melt from the heat of the sun.

Thinking the earth world soon would be safe, the animals started down. But some of them had accidents. Beaver split his tail, and the blood was spilled over lynx. Moose flattened his nose and Buffalo bruised his back. Ever since then, Beaver's tail has been flat, Lynx has been spotted, Moose has had a flat nose, and Buffalo has had a bump in his back. Since that time also, there have been bears in the earth world, for the three cubs came with the earth people.

But it was still hard to get food. The snow melted so quickly that the earth was covered with water. The fish, who had been living on the land, found that they could swim and so they carried their friends on their backs. The ducks set to work to pull the land up from beneath the water.

At last the people were so hungry that they sent Raven out to look for dry land. At that time Raven was the most beautiful of all birds. While looking for land, he found the body of a dead animal. Although he had never before eaten anything except berries and willow leaves, he began to feast on the body of his animal brother. As punishment, he was changed into the bird he is today. All the animals and birds hate him; and even man, who eats everything else, will not taste his flesh.

Then the people sent Ptarmigan out to look for dry land. When Ptarmigan came back, he carried on his back a branch of willow. It was a message of hope. As a reward, ptarmigans turn white when the snow begins to fall in the Barren Land. Thus they warn the animals and the people that winter is near.

But the peaceful and friendly life on Great Slave Lake was no more. When the floodwaters had gone, the fish found that they could no longer live on the land; if they did, they would be eaten by the birds and the animals. The birds found that they were safer high in the trees and up in the mountains than anywhere else. Every animal chose the place that suited it best. Soon the birds and fish and beasts could not understand the same language.

Not long afterward, the first human beings came to Great Slave Lake. Since then, there has been no peace.

The Big Snow Worldview Comparison Chart

Instructions: Compare the beliefs and values communicated in the Dene story "The Big Snow in the North Land" with those you think modern North America holds. What is the possible effect on culture or on the physical world of these beliefs? The first heading is started for you, but you can add other ideas.

Belief or Value		
Relationship of animals to each other	Dene (First Nation)	Possible Effect
	Animals once lived in friendship.	People don't want to hurt the animals.
	Modern North America	Possible Effect
	Everything is part of a food chain—predator eats prey.	People take advantage of the animals—don't think about how they help each other.
Origin of natural forces, weather	Dene (First Nation)	Possible Effect
	Modern North America	Possible Effect
Relationship of the individual and the group	Dene (First Nation)	Possible Effect
	Modern North America	Possible Effect
Relationship of people and nature	Dene (First Nation)	Possible Effect
	Modern North America	Possible Effect

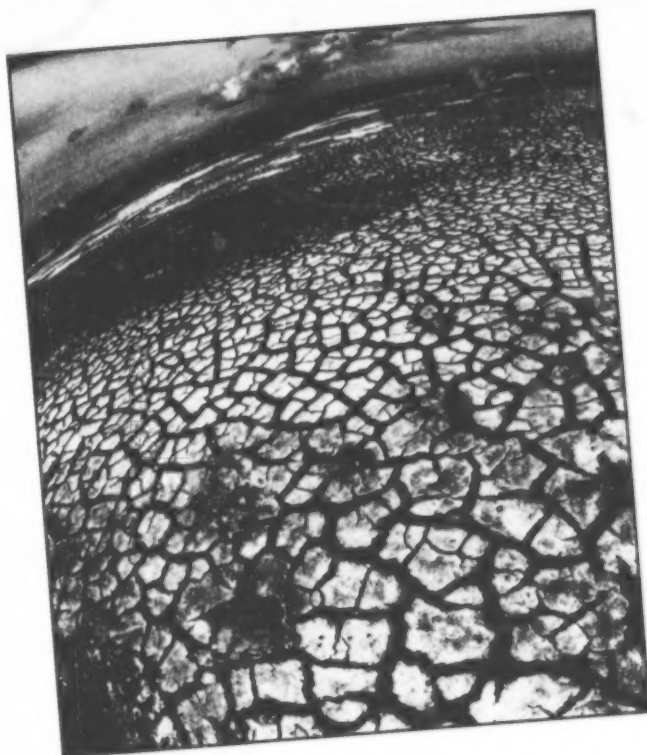
The Big Snow

Worldview Comparison Chart

Instructions: Compare the beliefs and values communicated in the Dene story "The Big Snow in the North Land" with those you think modern North America holds. What is the possible effect on culture or on the physical world of these beliefs? The first heading is started for you, but you can add other ideas.

Belief or Value		
Relationship of animals to each other	Dene (First Nation)	Possible Effect
	Animals once lived in friendship.	People don't want to hurt the animals.
	Modern North America	Possible Effect
	Everything is part of a food chain—predator eats prey.	People take advantage of the animals—don't think about how they help each other.
Origin of natural forces, weather	Dene (First Nation)	Possible Effect
	Modern North America	Possible Effect
Relationship of the individual and the group	Dene (First Nation)	Possible Effect
	Modern North America	Possible Effect
Relationship of people and nature	Dene (First Nation)	Possible Effect
	Modern North America	Possible Effect





Topic 2A

**Global Warming:
One of the
Problems**

(1.5 lessons)

This lesson focuses on some causes, effects, and solutions concerning global warming. Students will analyze an editorial cartoon; analyze and discuss global warming by viewing, reading, and connecting a number of stimulators; present information orally; and synthesize information from a number of sources in order to write about it. Some of the academic tasks are: extracting and connecting information from a variety of text

forms; listening for specific information; writing point-form notes; deducing the meanings of unfamiliar words and word groups; recognizing and using important markers; and introducing, describing, explaining, clarifying, and summarizing oral information.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.5 Examine and interpret various visual media...

SLO 4.1 Use language to encourage...

SLO 4.6 Respond to and critique a variety of individual perspectives...

SLO 5.1 Identify common themes and symbols...

SLO 5.3 Analyze ways in which languages and text affect...contemporary culture.

SLO 5.4.1 Demonstrate openness to working with ...different cultural...groups...

SLO 6.1 Students will know and use effectively metacognitive strategies...

SLO 6.1.5 Use selective attention...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.9 Use summarization...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Sequence 1

Activation

Step 1: Review environmental problems discussed in the first lesson. Focus on one important issue: global warming.

Show the editorial cartoon **Handout 2-3: "Blowing Up Your World."** Direct the students to Appendix 11, which is a list of directions for analyzing editorial cartoons. Discuss the different methods used by editorial or political cartoonists to achieve their purpose. Which ones are used in this cartoon? Ask students: What does the cartoon suggest about the crisis we have in our world regarding environmental issues such as global warming? What analogy is being used in this cartoon to show the seriousness of the situation?

Have students work in pairs to answer this question. Then come together as a class to share information.

Language Features

Vocabulary

to describe the visual: dynamite, explode, detonator, destroy, fuse

to describe the cartoonist's methods: analogy, symbolism, exaggeration

Student Learning Tasks**Teacher Notes and References**

Working with a partner, view **Handout 2-3: "Blowing Up Your World,"** and analyze it, following the steps outlined in Appendix 11 to answer these questions:

- What does the cartoon suggest about the crisis we have in our world regarding environmental issues such as global warming?
- What analogy is being used in this cartoon to show the seriousness of the situation? (P)

Answers are shared with the class. (C)



Handout 2-3: "Blowing Up Your World"

Appendix 11: How to Analyze Editorial Cartoons

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 2.1.3 Use developing control of grammatical features...

SLO 4.1 Use language to encourage...

SLO 4.6 Respond to and critique a variety of individual perspectives...

SLO 6.1 Students will know and use effectively metacognitive strategies...

SLO 6.2.2 Use repetition to imitate a language model...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.7 Use elaboration...

SLO 6.2.9 Use summarization...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Step 2: Brainstorm: Write the following focus questions on the overhead or board and have students discuss them in small groups:

1. What is global warming?
2. What are the known causes?
3. What are some of the effects/impacts associated with global warming?
4. Referring back to the language related to the activating cartoon: What can be done to diffuse the explosive situation we are in?
5. Are people "on board" in terms of these solutions? Are there different attitudes in different parts of the world?

Get a general overview of ideas from the students.

Language Features

Vocabulary

climate change, greenhouse effect, ozone layer, ozone hole, chlorofluorocarbons, nitrogen oxides, greenhouse gases, depletion, pollution, toxic waste, emissions, acid rain

Idiom: on board

Structures

Prefixes/suffixes and word families: fuse~diffuse; explode~explosion, etc.

Student Learning Tasks

In small groups, brainstorm responses to the questions:

1. What is global warming?
2. What are the known causes?
3. What are some of the effects/impacts associated with global warming?
4. Referring back to the language related to the activating cartoon: What can be done to diffuse the explosive situation we are in?
5. Are people "on board" in terms of these solutions? Are there different attitudes in different parts of the world? (6)

Report your general overview of the responses to the class. (C)

Teacher Notes and References

Terms related to global warming should be introduced here if students do not know them in English.

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.2 Use several visual techniques...

SLO 2.3.1 Use the structures and language features...

SLO 4.1 Use language to encourage...

SLO 4.2 Communicate effectively to work with others...

SLO 4.4 Manage group action...

SLO 6.1 Students will know and use effectively metacognitive strategies...

SLO 6.1.1 Use advanced organization...

SLO 6.1.2 Use organizational planning...

SLO 6.1.4 Use functional planning...

SLO 6.1.5 Use selective attention...

SLO 6.2.4 Use note taking...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.9 Use summarization...

Instructional and Learning Sequence

Sequence 2

Focus on the strategy of imagery. Ask students how they use visuals in academic study (to clarify information, to show relationships, to summarize, et cetera).

Give each pair of students two related stimulators, as well as a piece of chart paper and coloured markers. (Remind them of the T-List lesson in the previous module and the use of coloured markers to clarify information.)

Students will work together to analyze their stimulators and make connections between the two. They will design a large graphic organizer on their paper to depict the relationship between their stimulators, and summarize the main points made about global warming in point form on their organizer. Have students decide how to use the coloured markers to clarify or highlight important information.

Language Features

Structures

Punctuation: comma after parenthetical expressions

Discourse Features

Language to express cause/effect: due to; because of x; as a result of; resulting in; as a result; consequently; therefore, etc.

Language to express comparison: similarly, also, likewise, too, in the same way, etc.

Language to express contrast: in contrast; however; on the other hand, etc.

Discourse organization: organizational structure of different texts used

Student Learning Tasks

- Work with a partner to analyze two related stimulators and make connections between the two.
- Design a large graphic organizer to depict the relationship between the stimulators, and summarize the main points made about global warming in point form on the organizer. (P)

Handout 2-4: "The Indian Ten Commandments"

This handout is intended to capture the spiritual beliefs and code of conduct that are reflective of Aboriginal (Indian) belief systems. As traditional Aboriginal cultures were not Judeo-Christian, the use of the term "Ten Commandments" is a metaphor. The beliefs expressed reflect contemporary Pan-aboriginal/Indian beliefs. Some Aboriginal people may object to the use of the term "Ten Commandments." See Lone Wolf—Cherokee Religious Information <www.skyenet.net/~myersdk/religious.html>. The Indian Ten Commandments are popular in many U.S. sites and there are a variety of posters available online.

As an alternate reading you may wish to use a handout based on the *Seven Sacred Teachings*. In Canada, the *Seven Sacred Teachings* are used by many Aboriginal groups and are often found in Aboriginal perspectives learning resources to explain Aboriginal world views and as a summary of their spiritual beliefs and codes of conduct. The *Seven Sacred Teachings* complement and reflect some of the same world views and beliefs as expressed in "the Indian Ten Commandments" without attempting to make a connection to Judeo-Christian belief systems. See *Seven Sacred Teachings* at <www.theturtlelodge.com/teachings.htm>.

Teacher Notes and References



Handout 2-4: "The Indian Ten Commandments"

Handout 2-5: "The Ozone

Layer: What's Going On Up There?"

Handout 2-6: "Declaration of Interdependence"

Handout 2-7: "Our Earth Will Not Die"

Handout 2-8: "Ozone"

Handout 2-9: "Ozone Word Splash"

Handout 2-10: "The Green Leaders"

Handout 2-11: "Our Climate Is Changing"

Handout 2-12: Maps and Graphs



These stimulators should address the focus questions in the activation activity or express attitudes about global warming.

The teacher is responsible for deciding before class which stimulators to put together and to give to each group. It may be helpful to provide a word bank for the more difficult written pieces. Make sure that the stimulators are connected: cause~effect, problem~solution; two viewpoints on the same topic; description~example, et cetera.

You may want to do a mini-lesson on, for example, discourse markers used to signal the specific language of cause/effect and problem/solution.

Outcomes

SLO 1.4 Show an awareness of organizational patterns...

SLO 1.5 Examine and interpret various visual media...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.3.3 Produce effective oral presentations.

SLO 4.5 Experience and consider academic texts...

SLO 5.7 Select and present ideas...keeping in mind the intended audience.

SLO 6.1 Students will know and use effectively metacognitive strategies...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.2.4 Use note taking...

Instructional and Learning Sequence

Have student pairs take turns presenting their information to the class. Ask each presenting student to take an equal load.

Presenters:

1. Introduce their stimulators.
2. Explain the graphic organizer they have designed and the colour coding in showing the relationship between the two stimulators.
3. Present the information from the graphic organizer they have created.

Have peers make at least one constructive comment or ask one question while listening to the presentations.

After the presentations, all graphic organizers are displayed so that the information can be used by the class.

Language Features

Discourse Features

Discussion expressions for speaker and listeners: to hesitate, to introduce new ideas, to add information, to restate, to exemplify, to summarize, to probe, to question for clarification, to disagree and agree, etc.

Discourse markers: connecting words and phrases to indicate relationships

Student Learning Tasks**Teacher Notes and References****Assignment**

In pairs, present your information to the class using the following format. Share the presentation tasks so that each of you takes an equal load.

- Introduce the stimulators.
- Explain the graphic organizer you have designed and the colour coding in showing the relationship between the two stimulators.
- Present the information from the graphic organizer you have created. (P)

Classmates make at least one constructive comment or ask one question while listening to your presentations. (I) (C)

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 4.6 Respond to and critique a variety of individual perspectives...

SLO 6.1 Students will know and use effectively metacognitive strategies...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

Instructional and Learning Sequence

Sequence 3

Making the Problem Personal: In order for students to think about their own actions, use **Handout 2-13: "Blowing Up Your World"** as an activity with the class.

Student Learning Tasks

Follow the teachers' instructions for the "Blowing Up Your World" activity.

Respond to the questions about individual responsibility in environmental issues by raising your hand and recording your own score on paper.

Note the condition of the balloon by the end of the activity. Add up individual scores. What steps do we need to take to save our environment?

Teacher Notes and References

Handout 2-13: "Blowing Up Your World: Individual Responsibility in Environmental Issues" (teacher resource)

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.1.1 Analyze and edit texts...

SLO 2.1.2 Use standard Canadian spelling...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 2.3.1 Use the structures and language features...

SLO 2.4 Use the steps of the writing process...

SLO 3.1 Seek, organize, and synthesize information...

SLO 6.1.1 Use advanced organization...

SLO 6.1.2 Use organizational planning...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.2.4 Use note taking...

Instructional and Learning Sequence

Sequence 4

Roundup

Writing: Have students synthesize information from their brainstorming, viewing, reading, discussions, note taking, and activities. They have a choice of roundup activities. In their writing, students must use at least five new vocabulary words from this lesson. They can:

1. Make a prediction about what the condition of the world might be like in 50 years due to global warming. Create a newspaper headline and write a short article describing the situation. Will the situation become more life-threatening, or will humans react to the warning signals?
2. Write a paragraph explaining global warming based on what they have learned. In the paragraph, give one response to each of the questions from the activation portion of this lesson.
3. Write a personal response after completing the activity "Blowing Up Your World."

Language Features

Structures

focus on appropriate use of verb tenses, particularly third person, present tense, and on appropriate use of present tenses chosen and appropriate article use

Discourse Features

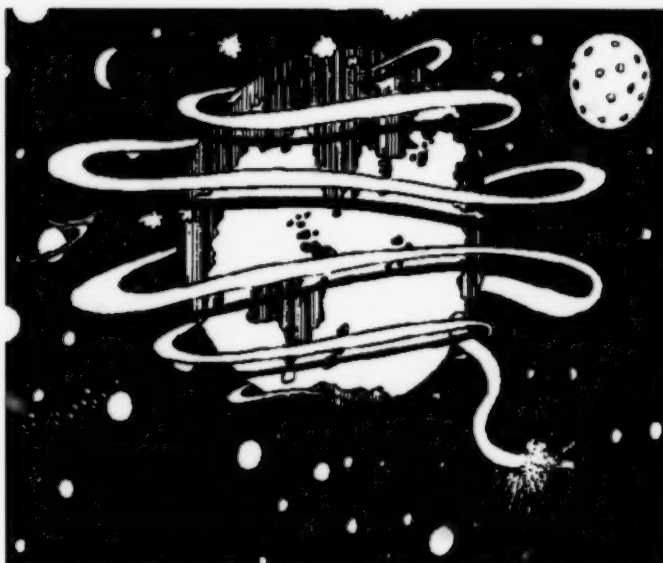
organizational structure of a paragraph
use of appropriate transition markers

Student Learning Tasks**Teacher Notes and References****Assignment**

Synthesize information from previous activities in one of the following writing formats:

1. Make a prediction, create a newspaper headline, and write a short article describing the condition of the world in 50 years.
2. Write a paragraph explaining global warming based on what you have learned. In the paragraph, give one response to each of the questions from the activation portion of this lesson.
3. Write a personal response after completing the activity "Blowing Up Your World." (I)

Blowing Up Your World



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The Indian Ten Commandments



Treat the Earth and all that dwell thereon with respect.

Remain close to the Great Spirit.

Show great respect for all your fellow beings.

Work together for the benefit of all Mankind.

Give assistance and kindness wherever needed.

Do what you know to be right.

Look after the well-being of mind and body.

Dedicate a share of your efforts to the greater good.

Be truthful and honest at all times.

Take full responsibility for your actions.

Author Unknown

Author unknown. Lone Wolf Band of Cherokee Indians <www.skynet.net/~meyersdk/religious.html>.

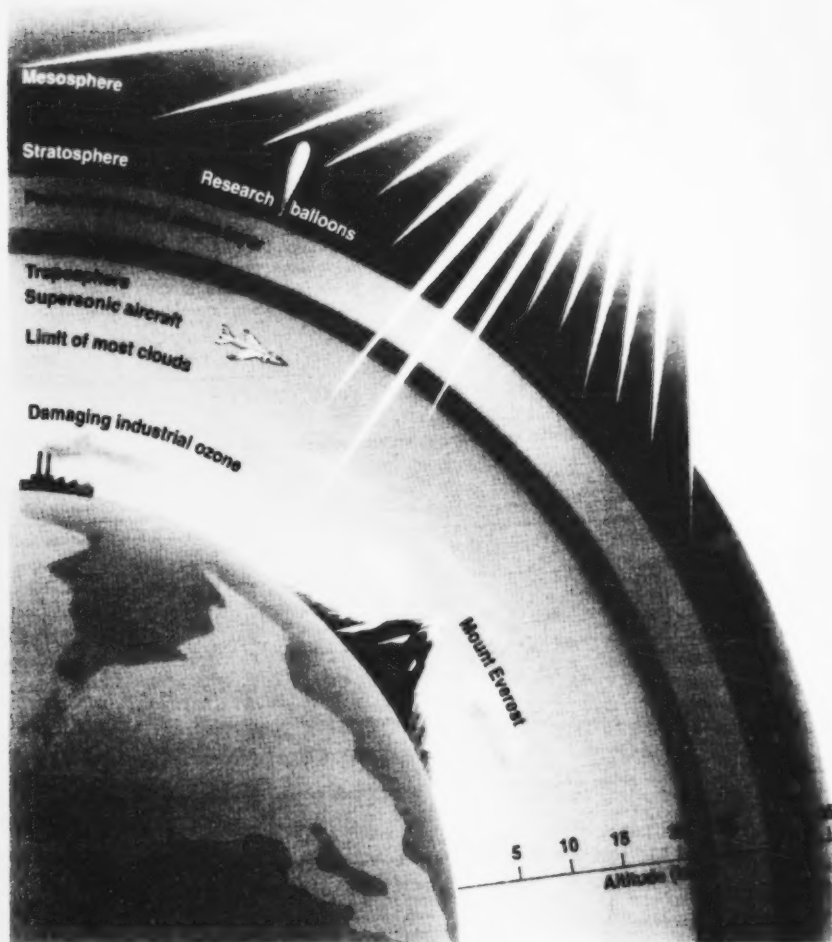


The Ozone Layer: What's Going On Up There?





The Ozone Layer: What's Going On Up There?



Copyright 1992 Environment Canada, Catalogue # EN56-94/1992E, ISBN 0-662-19745-3.
<<http://www.ec.gc.ca>>.



Declaration of Interdependence

Marshall McLuhan's global village has arrived. Our world has shrunk, thanks to satellite, fibreoptics, and other electronic media. You can no longer ignore what is happening on the other side of the world, for it happens in your living room every evening. You need to get to know your neighbour: in Australia, in Africa, in Europe, in South America, in Asia. You are interdependent.

The David Suzuki Foundation's DECLARATION OF INTERDEPENDENCE

THIS WE KNOW: We are the earth, through the plants and animals that nourish us. We are the rains and the oceans that flow through our veins. We are the breath of the forests of the land, and the plants of the sea. We are human animals, related to all other life as descendants of the firstborn cell. We share with these kin a common history, written in our genes. We share a common present, filled with uncertainty. And we share a common future, as yet untold.

We humans are but one of thirty million species weaving the thin layer of life enveloping the world. The stability of communities of living things depends upon this diversity. Linked in this web, we are interconnected—using, cleansing, sharing and replenishing the fundamental elements of life. Our home, planet Earth, is finite; all life shares its resources and the energy from the sun, and therefore has limits to growth. For the first time, we have touched those limits. When we compromise the air, the water, the soil, and the variety of life, we steal from the endless future to serve the fleeting present.

We may deny these things, but we cannot change them.

THIS WE BELIEVE: Humans have become so numerous and our tools so powerful that we have driven fellow creatures to extinction, dammed the great rivers, torn down ancient forests, poisoned the earth, rain and wind, and ripped holes in the sky. Our science has brought pain as well as joy; our comfort is paid for by the suffering of millions. We are learning from our mistakes, we are mourning our vanished kin, and we now build a new politic of hope. We respect and uphold the absolute need for clean air, water and soil. We see that economic activities that benefit the few while shrinking the inheritance of many are wrong. And, since environmental degradation erodes biological capital forever, full ecological and social cost must enter all equations of development. We are one brief generation in the long march of time; the future is not ours to erase. So where knowledge is limited, we will remember all those who will walk after us, and err on the side of caution.

THIS WE RESOLVE: All this that we know and believe must now become the foundation of the way we live. At this turning point in our relationship with Earth, we work for an evolution; from dominance to partnership; from fragmentation to connection; from insecurity to interdependence.

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Our Earth Will Not Die

NIYI OSUNDARE

(To a solemn, almost elegiac tune)

Lynched
the lakes
Slaughtered
the seas
Mauled
the mountains

But our earth will not die

Here
there
everywhere
a lake is killed by the arsenic urine
from the bladder of profit factories
a poisoned stream staggers down the hills coughing
chaos in the sickly sea
the wailing whale, belly up like a frying fish, crests
the chilling swansong of parting waters.

But our earth will not die

Who lynched the lakes. Who?
Who slaughtered the seas. Who?
Whoever mauled the mountains. Whoever?

Our earth will not die

And the rain
the rain falls, acid, on balding forests
their branches amputated by the septic daggers
of tainted clouds

Weeping willows drip mercury tears
in the eye of sobbing terrains
a nuclear sun rises like a funeral ball
reducing man and meadow to dust and dirt.

(continued)

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Our Earth Will Not Die (continued)

But our earth will not die.

Fishes have died in the waters.

Fishes.

Birds have died in the trees.

Birds.

Rabbits have died in their burrows.

Rabbits.

But our earth will not die

(Music turns festive, louder)

Our earth will see again
eyes washed by a new rain
the westering sun will rise again
resplendent like a new coin.
The wind, unwound, will play its tune
trees twittering, grasses dancing;
hillsides will rock with blooming harvests
the plains batting their eyes of grass and grace.
The sea will drink its heart's content
when a jubilant thunder flings open the skygate
and a new rain tumbles down
in drums of joy.
Our earth will see again

this earth, OUR EARTH.

Ozone

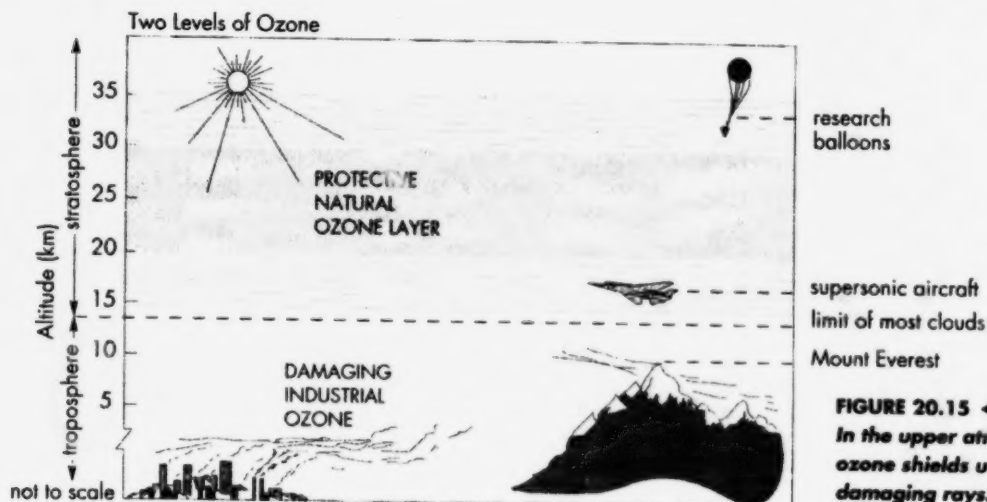


FIGURE 20.15 ◀
In the upper atmosphere, a layer of ozone shields us from the sun's damaging rays. Near ground level, ozone is a serious air pollutant.

THREATS TO THE OZONE LAYER

During the 1970s, scientists discovered that the amount of ozone in the upper atmosphere was declining. Beginning in the 1980s, large portions of the ozone layer over both the North Pole and the South Pole thinned out by about 50 per cent. The "holes" remained for two or three months of each year, but later filled in again (Figure 20.16). Scientists believe that the reason for this thinning involves the reaction of ozone with human-made pollutants that have been accumulating in the upper atmosphere.

Probe 10, Nelson. 1996.



Ozone Word Splash

Ozone Depletion
WORSENS

EEK—

Hole
in the
Ozone
Layer Opens
Again!

Aerosol Cans:
**Deadly and
Dangerous**

CAN WE KEEP SUNSHINE SAFE?

Radiation
Hazard to Eyes

Fate
of the Arctic
Remains Up
in the Air

Loss of the Ozone
Layer Protection:
Malformed Amphibians

Deadly
Chlorofluorocarbons:
We've Got to Make
Changes

Rapid Collapse of the
Antarctic Ice Shelf
Stuns Scientists

*What About
Ozone
Pollution?*

**NEW
THREATS
TO SKY**



The Green Leaders

In Canada and around the world, more and more industry leaders and communities are learning that there are opportunities that make both economic and environmental sense. They're finding out energy conservation and energy efficiency save money and create new industries and jobs.

Canadian Communities

Municipalities across Canada are reducing greenhouse gas emissions through a wide range of projects. Local governments say they can achieve one quarter of Canada's Kyoto target while creating jobs and strengthening the health of our communities.

Halifax: A city-wide composting program now prevents organic matter from reaching landfills. This has cut methane production by the equivalent of over half a million tons of carbon dioxide per year, compared to 1995.

Calgary: Calgary is achieving its target of six percent below 1990 levels ahead of schedule and at 50 percent projected costs, with substantial energy bill savings and employment created. Through the "Ride the Wind" initiative, the light rail system is powered by wind-generated electricity.

Edmonton: Target—to reduce emissions by six percent below 1990 levels by 2010, and 20 percent by 2020. Has already reduced emissions through one landfill waste-to-energy project by 174,949 tonnes.

Regina: Reduced emissions from internal operations nine per cent, or 10,000 tonnes annually, from 1988 levels. Energy retrofits will reduce emissions another four percent and save \$400,000 annually.

Sudbury: Will reduce emissions by 21,000–51,000 tonnes per year with a co-generation and district energy system. Retrofit programs aim to reduce energy consumption 30 percent and save more than \$800,000 annually.

St. John's: Retrofits to municipal buildings are expected to deliver annual energy savings of \$600,000, improve workplace lighting and comfort levels, and reduce maintenance costs.

Toronto: Reduced emissions by 67 percent below 1990 levels, exceeding the city's goal threefold, generating thousands of jobs and reducing costs for many operations. Success was achieved through landfill waste-to-energy programs, energy efficiency building retrofits, streetlight changes, and more efficient vehicle fleets.

Companies

Many companies are dramatically reducing greenhouse gas emissions, often exceeding the Kyoto target. So far, this is generally achieved at minimal cost or with considerable savings.

Abitibi-Consolidated (Forest Products): Reduced emissions on average 10 percent below 1990 levels, and 27 percent below 1988.

Alcoa (Aluminum Manufacturing): Committed to reducing emissions by 25 percent from 1990 levels by 2010, and by 50 percent from 1990 levels over the same period if their inert anode technology succeeds.

Alcan (Aluminum Manufacturing): Reduced emissions by over two million tonnes worldwide over the last decade; plans to cut another 500,000 tonnes in the next four years.

BP (Petroleum & Renewables): Achieved its target, eight years early, of reducing emissions 10 percent worldwide below 1990 levels at no net cost. Energy investments in renewables to grow 40 percent in 2002.

Canadian Chemical Producers' Association: Members reduced emissions 39 percent below 1992 levels, primarily due to declines in emissions of nitrous oxide.

Canterra Towers (Buildings): Oxford Properties reduced energy consumption by 30 percent and emissions 28 percent below 1992 levels, saving tenants \$1.5 million dollars in operating costs.

Dofasco (Steel Production): Reduced emissions 22 percent below 1990 levels by 1999, and 20 percent per unit of production. Target: to further improve specific energy intensity by 10 percent by 2010.

(continued)

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The Green Leaders (continued)

DuPont (Chemical Manufacturing): Reduced emissions worldwide by 45 percent and improved energy efficiency by 15 percent over 1990 levels. Uses renewables for 10 percent of global energy use. Target: to reduce emissions by 65 per cent.

Dow (Chemical Manufacturing): Reduced emissions by 14 percent below 1990 levels, and reduced the level of CO₂ per kg of product by 50 per cent. Target: to reduce emissions per unit of production another 10 per cent.

General Motors: Reduced emissions by 37 percent below 1990 levels, with a 30 percent reduction in emissions per vehicle produced. Target: to reduce emissions by 56 percent by 2005.

IBM (Information Technology): Reduced energy consumption worldwide by 25 percent through conservation, pocketing \$527 million. Canada's operations reduced emissions by 33 percent since 1990.

Inco (Mining & Manufacturing): Reduced emissions by seven percent below 1990 levels by 1999. Target: to reduce emissions by a further one percent annually to 2005.

Mining Association of Canada: Metal mining in Canada reduced total emissions by 25 percent below 1990 levels and improved per-unit emissions of metal concentrate by 13.8 per cent. Nonferrous metal smelting and refining decreased emissions by 1.8 percent and improved intensity by 15.9 over the same period.

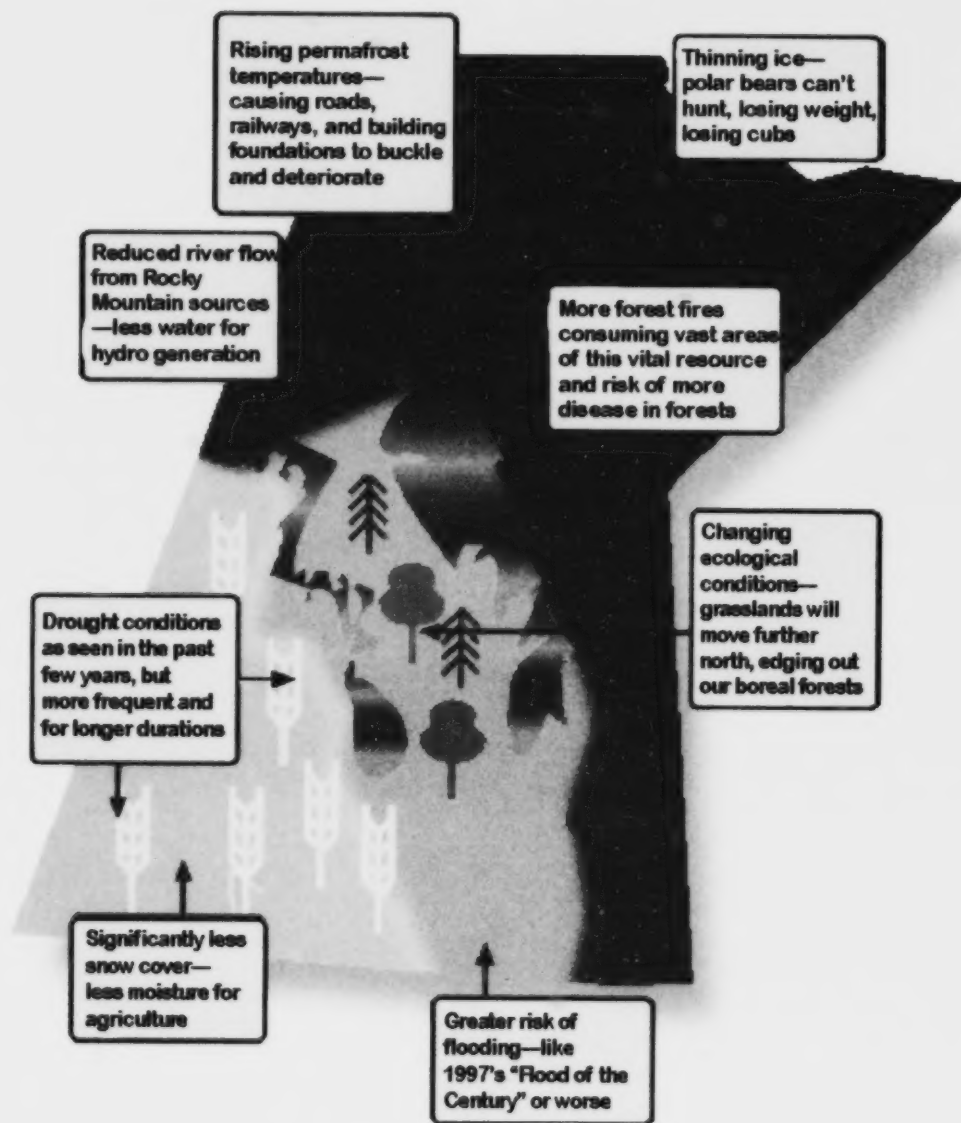
Nike (Garment Manufacturing, U.S.): Action Plan—To reduce CO₂ emissions worldwide from business travel and from facilities and services to 13 percent below 1998 levels by 2006.

Toronto-Dominion Centre (Buildings): Cadillac Fairview reduced electricity consumption in Canada's largest office complex by about 21 million kWh annually—enough energy to power 6,000 homes—saving \$2.5 million per year in energy costs.

Shell (Petroleum & Renewables): Reduced emissions 11 percent worldwide between 1990 and 2000, surpassing its target. Diversifying its investments in solar and wind technologies.

The information on this page is subject to change. For the most recent figures, please contact the municipality or business directly.

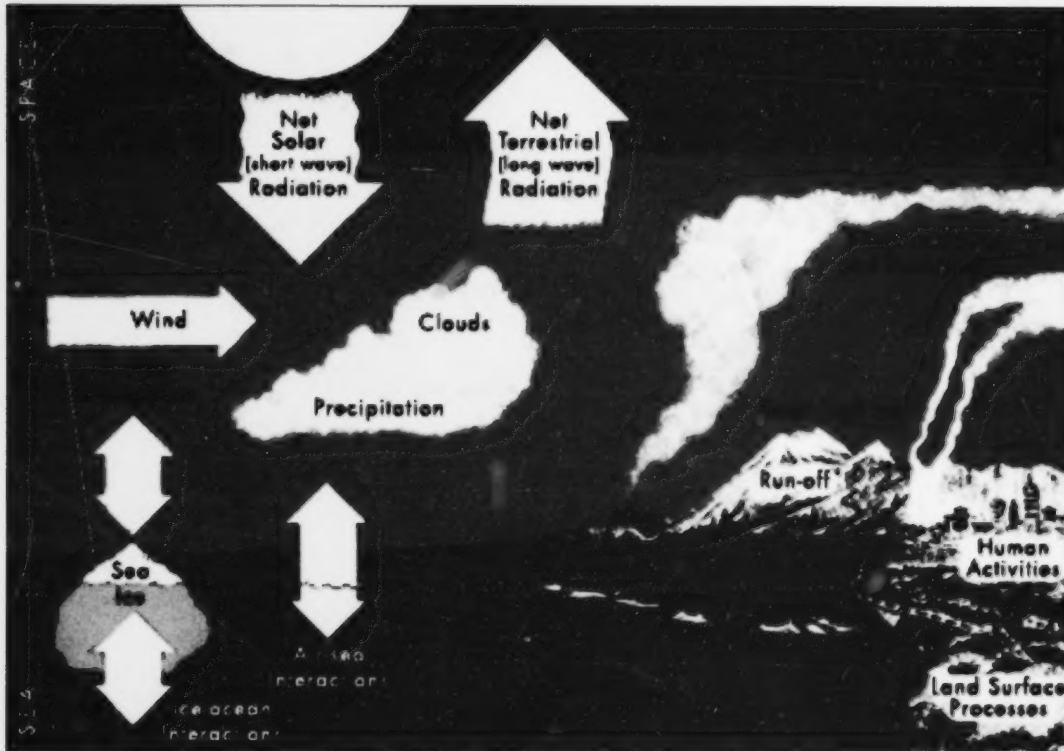
Our Climate Is Changing





Maps and Graphs

Major Elements of the Climate System

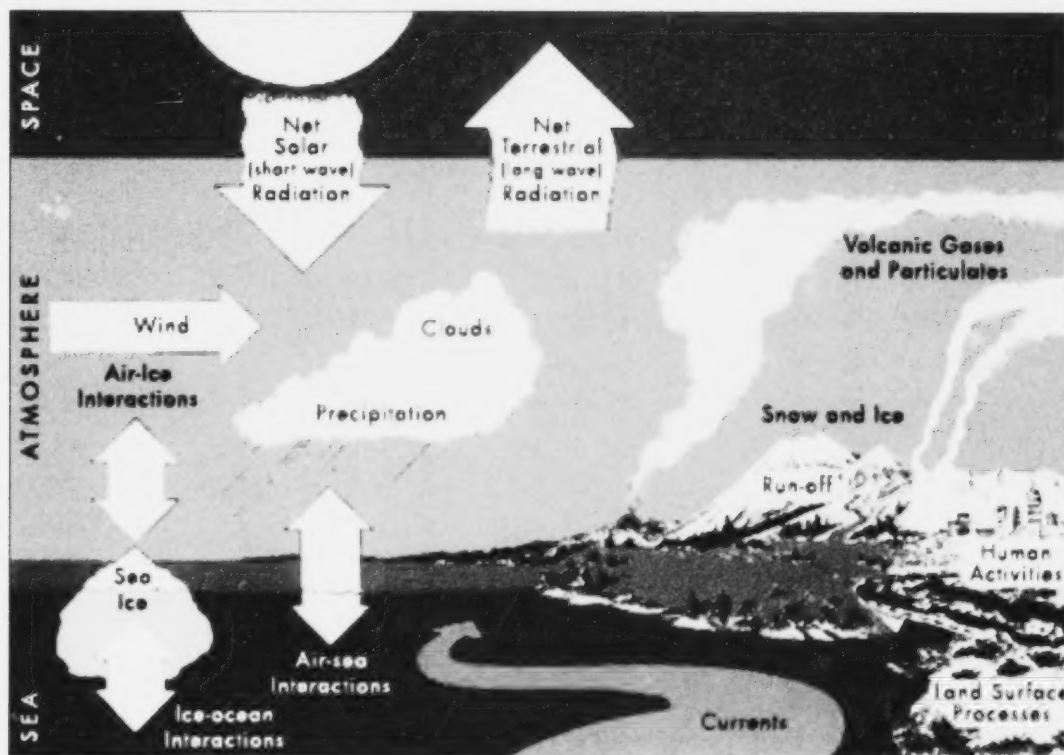


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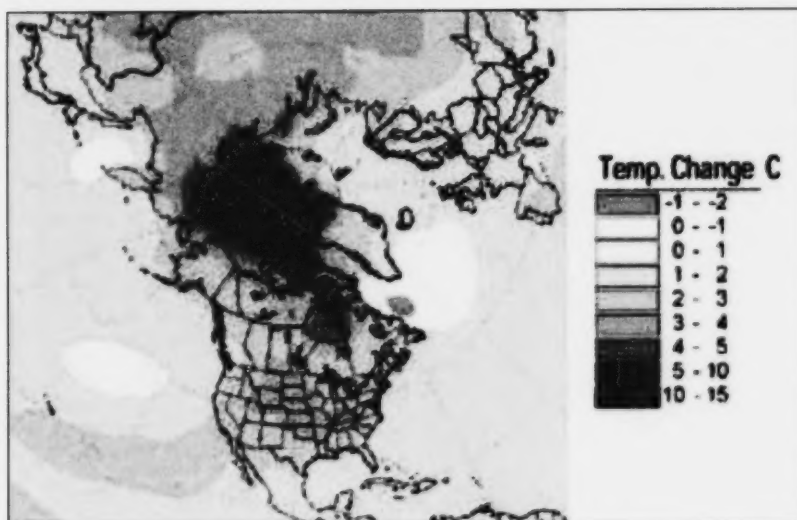
Maps and Graphs

Major Elements of the Climate System

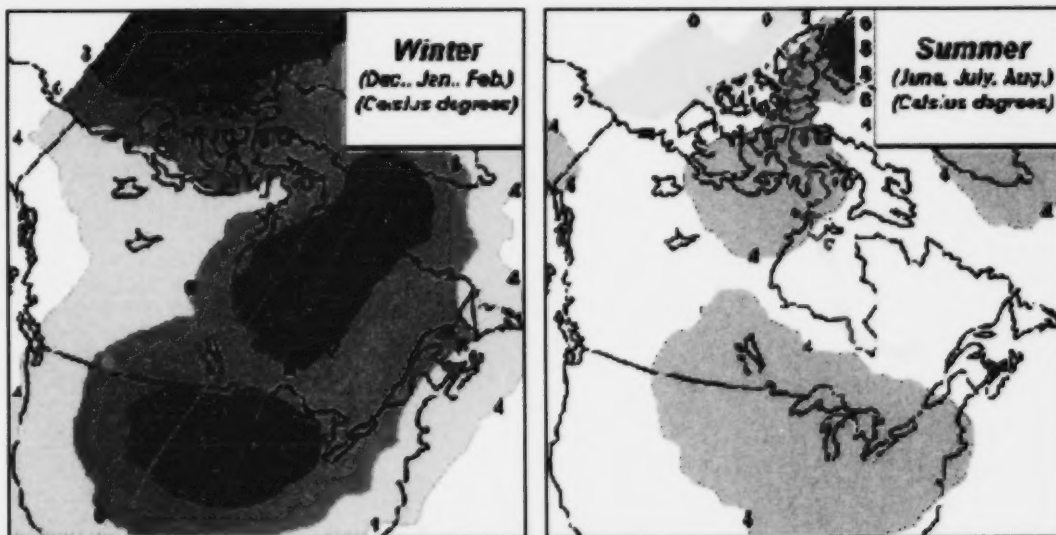
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Maps and Graphs (continued)

Projected Temperature Change Between 1975-1995 and 2040-2060



Combined Effects of Projected
Greenhouse Gases and Sulphate
Aerosol Increases—Canadian
Model

Temperature Projections for Canada for Winter and Summer Seasons Under Doubled Concentrations of CO₂

Climate changes will not be distributed uniformly. For a doubling of carbon dioxide concentrations, Canadian climate models project an increase of 3.5°C in the earth's average annual temperature but show more substantial warming over much of Canada, particularly in winter.

Different models have different projections for how much temperatures will change. For instance, the Geophysical Fluid Dynamics Laboratory GCM (GFDL 91) model projects increases of 2 to 6°C in the winter and 2 to 3°C in the summer, while the Goddard Institute for Space Studies GCM (GISS 85) model projects increases of 2 to 14°C in the winter and 1 to 2°C in summer.

Blowing Up Your World: Individual Responsibility in Environmental Issues

1. One student is given a balloon and asked to blow it up so it is full-blown. The balloon should not be tied but should be held closed.
2. Tell students that the balloon represents the world they have inherited from past generations. It is obviously tight with the environmental stress put on it.
3. Have the students determine how they are adding to or detracting from this stress by having them respond to a number of questions. In response to each question, students will raise their hands to indicate a positive response.
4. The student with the balloon will blow one big breath of air for every 3 to 5 students whose behaviour damages the environment.
5. For each question, students record their scores on a piece of paper.
6. How many of you use aerosol hairspray or hair products? (Hands down get 3 points.)
7. How many of you use a hair dryer, curling iron, electric razor, or other energy-consuming convenience appliance, especially in the morning? (Hands down get 3 points.)
8. How many of you, when you go to the store, get a bag for your purchases, even if you have only one or two small items to carry? (Hands down get 2 points.)
9. How many of you carry lunch to school in a reusable container? (Hands up get 2 points.)
10. How many of you eat take-out or cafeteria food that is served in Styrofoam or plastic containers? (Hands down get 7 points.)
11. How many of you use handkerchiefs instead of disposable tissues or cloth towels instead of paper towels? (Hands up get 2 points.)
12. How many of you plan to buy a sports car when you can afford it? (Hands down get 4 points.)
13. How many of you throw your old cell phone away when you get a new one? (Hands down get 3 points.)
14. Is your sewage treated before it flows into a body of water? (Hands up get 6 points: zero points for those who don't know.)

Questions:

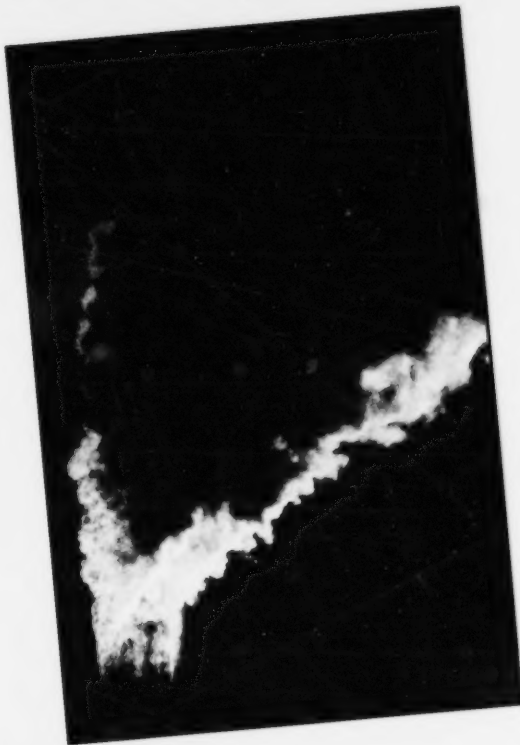
1. How many of you leave your bedroom light on when you are not in the room? (Hands down get 2 points.)
2. How many of you walked, biked, inline skated, or took the bus to school today instead of coming by car? (Hands up get 3 points.)
3. How many of you drink a soft drink, then throw the container in the garbage? (Hands down get 3 points.)

Add up your score:

- 31-40 Very good! You're an environmentalist!
21-30 Good! You're starting to save the world!
11-20 Lots of room for improvement.
0-10 You're exiled to the town dump!

Did the balloon blow up? What must we do to save our environment?





Topic 2B

**Kyoto:
A Controversial
Solution to Global
Warming**

(1–2 lessons)

This lesson focuses on the basic premise of the Kyoto Accord and its controversial nature. Students will listen to and take notes on an article about the Accord, focusing on different categories of vocabulary used in the article; read and discuss an interview expressing contrasting ideas about the Accord, noticing conversational gambits used in a debate-type discussion; and write an editorial expressing the point of view of a fictional character

they create. Some of the academic tasks included are: using abbreviations and symbols in note taking, using correct intonation and inflection, recognizing important markers, recognizing voice, using selective attention to extract relevant points, following an argument, reading critically, participating in discussion, classifying, and developing a written argument.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 2.1.3 Use developing control of grammatical features...

SLO 4.1 Use language to encourage...

SLO 4.2 Communicate effectively to work with others...

SLO 6.1 Students will know and use effectively metacognitive strategies...

SLO 6.1.5 Use selective attention...

SLO 6.2.3 Use grouping of items to classify...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.3.1 Use questioning for clarification...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Sequence 1

Activation

Hypothesizing: Group students in triads and have them respond to the following questions:

1. What is the Kyoto Accord?
2. Is the Kyoto Accord a good solution to global warming? (opinion)

Students work together to make a list of the types of people, organizations, and countries that, in their opinion, would support the Accord, and a list of those that wouldn't. Meet as a class and compare lists. Record important vocabulary words and ideas on the board.

Language Features

Structures

Subordinate conjunction—because

Discourse Features

Agreement: I agree with...; You're right...; That's a good idea/suggestion because...

Disagreement: I disagree with...; I don't think...; That's not exactly right...; I don't think so...; I think... because...; I can't support that idea because...

Discourse Markers: cause/effect; problem/solution

Student Learning Tasks**Teacher Notes and References**

In triads, respond to the following questions:

1. What is the Kyoto Accord?
2. Is the Kyoto Accord a good solution to global warming?
(opinion)

Work together to make a list of the types of people, organizations, and countries who would support the Accord, and a list of those who wouldn't. (■)

Compare lists as a class. (■)

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 1.7 Evaluate a given text...

SLO 6.1.2 Use organizational planning...

SLO 6.1.3 Use directed attention...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.4 Use note taking...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.9 Use summarization...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Sequence 2

Confirmation

Read a short article about Kyoto to the students. First, provide each student with a note-taking organizer (**Handout 2-15: "Kyoto: The Barebones—Note-Taking Organizer"**). Make sure students understand the headings. They will try to predict what they might hear under each heading.

Introduce any vocabulary students might need to take notes. Record this vocabulary on the board for students to refer to as necessary. Explain to the students that you will read "Kyoto: The Barebones" to them. Their assignment is to record in point form the main facts presented under each subheading. Remind them to use note-taking symbols and shorthand as they record information. Read the article once, slowly. Read it once more at a more normal pace. Stop reading.

Students then compare their notes. As they sit in pairs, read the article once more. Students check their notes and add information they may have missed. To conclude, elicit the notes from the students and create a master copy on chart paper.

Language Features

Vocabulary

Idioms: the wrinkles

Environmental vocabulary (new and reviewed from the global warming lesson): environmental threat, fossil fuels, methane, reduce, emissions, carbon dioxide

Business vocabulary: opted, ratify, cap and trade, consultation, financing, collapsing economy, exempt, offset, abatement programs, credit

General vocabulary: obligation, formulated, large-scale, culprit, vent, anaesthetics, profligate, hefty, controversial

Structures

use of articles (review)

Student Learning Tasks

Using **Handout 2-15: "Kyoto: The Barebones—Note-Taking Organizer,"** predict what you might hear under each heading.

As the text is read, record on **Handout 2-15: "Kyoto: The Barebones—Note-Taking Organizer"** the main facts presented under each subheading, using note-taking symbols, point form, and shorthand. **(I)**

In pairs, compare notes, read the article again, and add missed information. **(P)**

Contribute notes to a master class list. **(C)**

Teacher Notes and References

Handout 2-14: "Kyoto: The Barebones" (teacher resource)

Handout 2-15: "Kyoto: The Barebones—Note-Taking Organizer"



Here, you may want to focus on the addition of certain filler words to the point-form notes as a grammar lesson. Choose one structure on which to focus (e.g., rules for using articles).

Outcomes

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.3.2 Demonstrate increasing awareness of... rhetorical forms...

SLO 4.1 Use language to encourage...

SLO 4.5 Experience and consider academic texts...

SLO 4.6 Respond to and critique a variety of individual perspectives...

SLO 5.6 Evaluate texts...

SLO 6.1 Students will know and use effectively metacognitive strategies...

SLO 6.1.3 Use directed attention...

SLO 6.1.5 Use selective attention...

SLO 6.2.1 Use resourcing to access...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.9 Use summarization...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Controversy: Guide students to realize there can be many points of argument about the Accord. Distribute **Handout 2-16: "Economy vs. The Environment: Pros and Cons."**

Choose students to take turns reading the interview out loud while others listen. Discuss the interview and the points made by each speaker. Focus on the controversy.

Language Features

Vocabulary

subsistence economy, environmental indicator, burning fossil fuels, wind power, clean energy jobs, energy efficiency, renewable energy, windmill, solar, geothermal, photovoltaic industry, coal-fired power plant, Greenpeace, deplete, robust economy, tax credits, investment, economists, assumption, boldest, innovative, obligation, spur, engaging, technology transfer

Idioms: put money into; make your case; I don't get it; put it this way; spur investment; the bottom line; leapfrog; take the lead; at the root

Pronunciation

stress and rhythm of English; clear expression of tone for each speaker; sounds—focus on most consistent errors (l, r, th, final s, ed); linkage; reduction

Student Learning Tasks

Take turns reading the interview out loud while others listen. (I)
(C)

Discuss the points made by each speaker, focusing on the controversy. (C)

Teacher Notes and References

Handout 2-16: "Economy vs. The Environment: Pros and Cons" (script of interview with Bill Kovac and Kert Davies)



This interview is also available in audio form online from the *Voice of America News*, 6 June, 2002. You may choose to use the audio instead to give your students more practice listening to other speakers of English.

Outcomes	Instructional and Learning Sequence					
SLO 1.4 Show an awareness of organizational patterns... SLO 2.1.3 Use developing control of grammatical features... SLO 4.1 Use language to encourage... SLO 4.4 Manage group action... SLO 5.6 Evaluate texts... SLO 6.1.5 Use selective attention... SLO 6.2.3 Use grouping of items to classify... SLO 6.3.2 Use co-operation...	Students work individually to highlight the gambits used by the speakers to make their points. As a class, create categories of gambits (e.g., disagreement, restatement, hesitation, interruption). Also, note the language of the moderator. <table border="1"> <tr> <td rowspan="4">Language Features</td><td>Vocabulary</td></tr> <tr> <td>Idiom: the bottom line</td></tr> <tr> <td>Structures Use of modals: we can, we should, we could, I would</td></tr> <tr> <td> Discourse Features Speakers: I would argue...; I would make the argument...; The question that is brought up by that is...; Well, let's put it this way...; I guess the question that I would ask you is...; I don't believe...; I would agree with you...; The truth of the matter is...; And yet...; The bottom line is...; I think that's a great example...; Let me interrupt for a minute...; I want to ask you one quick question, though...; I think...; For example...; That's probably the one point we agree on...; The point is...; etc. Moderator: Your rebuttal? A thought on that? </td></tr> </table>	Language Features	Vocabulary	Idiom: the bottom line	Structures Use of modals: we can, we should, we could, I would	Discourse Features Speakers: I would argue...; I would make the argument...; The question that is brought up by that is...; Well, let's put it this way...; I guess the question that I would ask you is...; I don't believe...; I would agree with you...; The truth of the matter is...; And yet...; The bottom line is...; I think that's a great example...; Let me interrupt for a minute...; I want to ask you one quick question, though...; I think...; For example...; That's probably the one point we agree on...; The point is...; etc. Moderator: Your rebuttal? A thought on that?
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Student Learning Tasks

Highlight the gambits used by the speakers. (I)

Contribute to class discussion to create categories of gambits.
(C)

Teacher Notes and References

Language is always changing. Point out to students the use of the verb *grow* as in "grow the economy."

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 1.4 Show an awareness of organizational patterns...

SLO 1.6 Interpret a range of texts...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.1.1 Analyze and edit texts...

SLO 2.1.2 Use standard Canadian spelling...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.3.1 Use the structures and language features...

SLO 2.4 Use the steps of the writing process...

SLO 3.1 Seek, organize, and synthesize information...

SLO 3.2 Develop and implement a plan for researching...

SLO 5.2 Analyze and use the appropriate level of formality...

SLO 6.1.1 Use advanced organization...

SLO 6.1.2 Use organizational planning...

SLO 6.1.3 Use directed attention...

SLO 6.1.5 Use selective attention...

SLO 6.2.11 Use transfer...

Instructional and Learning Sequence

Writing Assignment

Students create a fictional character who either agrees or disagrees strongly with the implementation of the Kyoto Accord. They think about the person's reasons for his or her position. Encourage students to research to help them create a more believable character with a strongly supported point of view. Ask students to write a letter to the editor of *Voice of America News* as this character, explaining who this character is, and what his or her vested interest and attitude to the Accord is, quoting the speaker from the interview who supports these beliefs. Encourage students to look at some examples of letters to the editor before they start. Instruct students to clearly take one side of the issue based on who they are. This will be written in the first person. Use at least three expressions listed earlier from the interview.

Language Features

Vocabulary

Adverbs to indicate tone and opinion: strongly, clearly, absolutely, unquestionably

Structures

use of appropriate tense

Discourse Features

format of a letter to the editor

Roundup

Create a grammar exercise for students to complete as part of their roundup to review the use of articles, using vocabulary and ideas from this lesson.

Student Learning Tasks**Assignment**

Review examples of letters to the editor. Write a letter to the editor of *Voice of America News*. Do the following:

- a) Create a fictional character who agrees or disagrees strongly with the implementation of the Accord.
- b) Do research to help you create a more believable character and to support your position.
- c) Explain who you are, what your vested interest is, and what your attitude to the Accord is, quoting the speaker from the interview who supports your beliefs.
- d) Write in the first person and use at least three expressions listed earlier from the interview. (I)

Teacher Notes and References

Samples of letters to the editor
(teacher-provided)



Kyoto: The Barebones

The Deal: The Kyoto Protocol, a plan constructed in Kyoto, Japan, in 1997, is the only international agreement that sets targets to reduce greenhouse gas emissions that cause climate change. It represents a decade of negotiations and includes mechanisms to provide efficient implementation.

The Problem: According to scientists, greenhouse gases form a blanket in the upper atmosphere, trapping heat from the sun and contributing to the phenomenon commonly known as global warming. There are a number of gases targeted as culprits, the most important one being carbon dioxide, or CO₂, which is produced when fossil fuels, such as coal oil and natural gas, are burned. Some of the other contributing gases are methane (CH₄) and nitrous oxide (N₂O), as well as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluorides (SF₆), which are used as refrigerants, heat conductors and insulators. Chlorofluorocarbons are also powerful greenhouse gases. Canadians currently produce 700 megatonnes of greenhouse gases per year. This translates to 2% of global emissions coming from a country with about 1/2 of 1% of the world's population. In other words, the average Canadian produces four times the global average level of emissions.

The Target: In order for the Kyoto Protocol to come into force, 55 countries that produce 55% of the developed world's 1990 carbon dioxide emissions must ratify it. The European Union ratified in May, 2002, and Japan followed suit a month later. In December, 2002, Canada ratified the agreement under Prime Minister Jean Chretien. More than 100 countries have now ratified the agreement. The reduction targets are different for each country, but Canada must reduce its emissions over the years of 2008 and 2012 to 6% below 1990 levels. A recent study, "Kyoto and Beyond," shows that we can cut Canada's total emissions in half by 2030 using existing technology, while maintaining our quality of life and economic growth at "business as usual" levels.

Who's Not In? Developing countries, including India and China, are exempt from reducing greenhouse gases in the first phase of Kyoto reductions because their per-capita emissions are much lower than those of developed countries. It is important to note that China has already made cuts even without legal requirements to do so. Unfortunately, the United States, the world's most profligate energy user, has not opted to ratify, along with Australia.

The Business Plan—Cap and Trade: It's actually a straightforward plan in which Ottawa, after consultations with the industrial sector, would set a mandatory limit, or cap, for greenhouse emissions. Industries especially affected would be the oil and gas industry, the industrial sector, and generating plants. The oil-rich province of Alberta has concerns about the impact of this plan, but the Canadian government predicts that Alberta's economy will actually grow by an estimated 12% by 2012 assuming a middle-of-the-road plan for implementing Kyoto. An emissions trading system between energy-efficient firms and inefficient ones would develop, allowing businesses to sell unused portions of their caps. New and expanding operations would have to purchase emission permits through this trading system.

The Wrinkles: There are other methods by which large firms having difficulty meeting their targets can gain Kyoto credits. One is to finance abatement programs in developing countries and even in industrialized nations that are in need of creative solutions to the problems of global warming. Such programs could take the form of:

- education programs
- development programs to implement the use of alternative and renewable fuel sources such as natural gas, wind, and solar power
- projects to develop cattle feed that reduces or stops cows from belching methane gas
- afforestation projects
- aggressive biofuels and energy-efficiency programs

(continued)

Kyoto: The Barebones (continued)

Bigger Wrinkle: Canada wants a 70-million-tonne credit for clean (natural gas and hydro) exports, especially to the U.S., that displace dirtier fuels, reducing gas emissions. However, the United States has not agreed to ratify Kyoto, so the UN has not agreed to this credit. That leaves a gap of 96 million tonnes a year which new policies will have to fill. The most controversial offset, as the credits are called, is Russia's so called "hot air" program, which would allow the country to export excess pollution rights to countries that might not otherwise be able to meet their quotas. This is possible for Russia because of the collapse of so many Russian industries after the fall of the Soviet Union, leaving emissions already far below their 1990 levels.

References:

"Kyoto: The Details" at:

<www.cbc.ca/news/features/kyoto_cost2.html>

David Suzuki Foundation: "Climate Change: FAQs"

at: <www.davidsuzuki.org/Climate_Change/Kyoto/FAQs.asp>

David Suzuki Foundation: "Climate Change: Kyoto

Protocol" at: <www.davidsuzuki.org/climate_change/kyoto/kyoto_protocol.asp>

**Kyoto: The Barebones
Note-Taking Organizer**

The Deal	
The Problem	
The Target	
Who's Not In	
The Business Plan	
The Wrinkles	
The Bigger Wrinkle	



Economy vs. the Environment: Pros and Cons

Is it possible to protect the environment and see economic growth at the same time? This is a big question. And with us to discuss all this, from the environmental group Greenpeace, Kert Davies, and from the U.S. Chamber of Commerce, Bill Kovacs.

Mr. Kovacs: I would argue that the only way you can ever have environmental protection is by generating the wealth to protect the environment. If you go through the history of civilization, you find that we started off really as a subsistence economy, then we moved to agriculture, then we moved to industrial. And at each stage of the process you accumulate wealth. But the lower the stage of the process, the more you deplete the resources, the more you deplete the wood, the coal—whatever it is that's in the ground—the more you use the resources. And then, as you move from an industrial society to an information and service society, you then have created the wealth and you begin to reinvest that in environmental protection.



And if you look at what's happened over the last 30 years, the American business community has put \$3 trillion into environmental protection. Every single environmental indicator is going the right way. So I would make the argument that the only way that you can ever have true environmental protection is to really generate the wealth that can pay for it.

Mr. Borgida: Mr. Davies, your rebuttal?

Mr. Davies: The question that is brought up by that is: Why can't this economy, the most robust economy in the world, take the lead and the rightful leadership role that the U.S. should have on this issue of global warming?

Now the Bush administration says it's a real problem, humans are causing it, the burning of fossil fuels is at the root. And yet the government's reaction is to do nothing. I don't get it.

Mr. Kovacs: Well, let's put it this way. You can sit there and say the government is doing nothing, but all of the studies are based on very small amounts of data. And they're asking you to make the assumption that we're going to put 2.4 million people out of work, that we are going to lose about \$300 billion a year in the GDP. So I guess the question that I would ask you is: If you were going to implement the Kyoto Treaty, how could you do it without costing 2.4 million jobs and \$300 billion a year to the economy?

Mr. Davies: I don't believe those numbers. I think we can grow the economy. I think we can build clean energy jobs. I know that wind power, for example, has grown 40 percent in the last year in this country. There is a path forward that includes clean jobs, clean cars. U.S. industry is the boldest in the world, the most innovative. We should be selling this technology to the developing world. We should be moving forward with our innovation and our prowess in these things, and leading the world forward to a clean energy economy that not only protects the environment but makes lives better everywhere.



Mr. Kovacs: I would agree with you that we certainly should be selling our energy efficient technologies to the world. That is the number one thing that we should be doing. Because the truth of the matter is, if the United States went out of business tomorrow, the rest of the world is still going to continue to emit more greenhouse gases. China, Mexico, India, they're going to continue to emit. So what we have to do is we do have to transfer this technology there.

Mr. Davies: We have an obligation. We are 25 percent of the pollution in the world, with 5 percent of the population. We have an obligation to act now, and act quickly.

(continued)

Economy vs. The Environment: Pros and Cons (continued)

Mr. Kovacs: Well, we are acting. If you look at the energy efficiency of the United States, for example, it took 20,000 BTUs in 1970 to create a dollar of GDP. Today it takes 8,000. We're about 60 percent more efficient than we were then. We're efficient on the amount of oil that we're using. We're efficient on every single aspect of—

Mr. Davies: And yet the Bush administration says we need more oil and doesn't say we need more renewable energy, more clean energy. It doesn't make sense.

Mr. Kovacs: No. If you look at the Bush energy plan, it talks about renewables. It talks about tax credits to spur investment. In the House bill, you have \$22 billion worth of new investment into renewables. But the bottom line is, no matter how much you talk about it, renewables as you talk about them—wind and sun and solar and geothermal—is about 1 percent of all of the energy in the United States.

Mr. Davies: We just did a report with the European photovoltaic industry—or the European Wind Energy Association, and found that wind could provide 12 percent of the world's electricity in 20 years. That's a short time frame. It can be done. It's on that path already.

Mr. Kovacs: I think that's a great example. You have to ask the viewing public: How many people want a windmill in their yard? These things are about 120 feet high, 60-foot blades.

Mr. Davies: Who wants a coal-fired power plant in their yard?

Mr. Kovacs: They're not.

Mr. Davies: Who wants a nuclear power plant in their yard? This goes both ways.

Mr. Kovacs: They serve large communities. The wind and a wind farm is—

Mr. Davies: Wind is making money for farmers in Iowa and all around the world.

Mr. Borgida: Mr. Davies, let me interrupt for a minute. This is an engaging conversation; I want to ask you one quick question, though. You mentioned a windmill in your yard and those kinds of things. Not

everybody in the world has a yard in which to place a windmill, and are concerned about this issue. There are Third World people out there who are concerned about surviving each day. How do you make your case, particularly on the environmental side, to a part of the world where making it through the next day is important?

Mr. Davies: There is nothing better for the developing world than renewable energy. It is low input. There are no wires required. You set up a distribution system that's just for a village, build solar power for that village. At the meeting in Bali right now, Greenpeace is demanding that governments of the world put a whole lot more money than they are right now into renewable energy for the poorest people in the world. It just makes perfect sense. It fits perfectly with those economies.

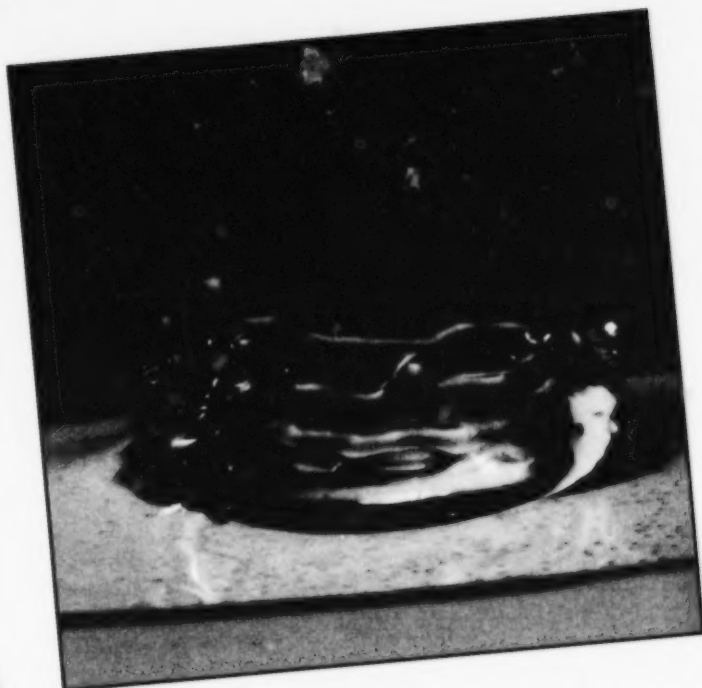
Mr. Borgida: Mr. Kovacs, a thought on that?

Mr. Kovacs: I think the economists are very clear that people don't worry about the environment until they have a set standard of living. For example, if you want to address deforestation, that occurs when there is about a \$7,000 per household income. And you have to begin generating wealth in these nations. And generating wealth means moving them from subsistence living to industrial and then into the information age. And the best way to do that is technology transfer. I think that the United States is very well-equipped to do that, and we should do it. And that's probably the one point we agree on.

Mr. Davies: And we would agree on that.

Mr. Kovacs: The bottom line is we have to—

Mr. Davies: The point is we have to leapfrog the dirty technology and go to the clean—not let these countries and these people make the same mistakes that we made in going through these dirty pathways. It's simple.



Topic 3A

Water: The Problem

(1–2 lessons)

This lesson focuses on conflicts arising due to the importance of water.

Students will skim and then read a short article, analyze and discuss a map and graph, create a timeline, classify and use new vocabulary, and write a short research report. Some of the academic tasks are: skimming, extracting relevant information,

making notes, drawing conclusions, summarizing, quoting directly, citing sources, paraphrasing, pronouncing properly, deducing the meanings of unfamiliar words and groups of words, and listening selectively.

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.4 Show an awareness of organizational patterns...

SLO 1.7 Evaluate a given text...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.3.1 Use the structures and language features...

SLO 4.1 Use language to encourage...

SLO 6.1.5 Use selective attention...

SLO 6.2.7 Use elaboration...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Sequence 1

Activation

Play a tape of appealing water sounds as a tanka and a haiku about water are read. Ask students to comment on the emotional response to the sounds of water. Have them discuss this tanka as a poem in which the words are complemented by the sounds of the water, and the haiku as a poem in which the words act as a contrast.

Ask a student to read Matsuura's statement in **Handout 2-17: "Water Poetry."** Have class members list reasons for the comment, and then brainstorm known water problems in their countries of origin and globally, comparing and contrasting.

Suggested questions for discussion: Is water a plentiful commodity in the world? What about in your country of origin? What do you think the situation regarding water was 50 years ago? Why has it worsened over time? Predict what the situation will be in another 50 years. Suggest some of the causes of our water problems (supply and demand, pollution, poor management, et cetera).

Record a list on the board, the overhead, or on chart paper.

Language Features

Structures

Adjectives to describe the sounds of water: peaceful, clean, spiritual, soothing, etc.

Articles: appropriate use with names of places and bodies of water (definite article with names of rivers [e.g., the Winnipeg River]; no definite article with the names of lakes [e.g., Lake Winnipeg])

Pronunciation

r, l, th, cl, pl, gr, cal (focus on any sounds that are problematic in terms of intelligibility)

Discourse Features

contrast markers, comparison markers, structure of tanka and haiku

Student Learning Tasks**Assignment**

Comment on the emotional response to the sounds of water in the tanka, where the words are complemented by the sounds of the water, and the haiku as a poem in which the words act as a contrast. (C)

As one student reads Matsuura's statement in **Handout 2-17: "Water Poetry,"** class members list reasons for the comment, then brainstorm known water problems in their countries and globally, comparing and contrasting. (C)

Contribute to the discussion by commenting on the questions posed. (I) (C)

Teacher Notes and References

Short tape of pleasant water sounds (teacher-provided)

Handout 2-17: "Water Poetry"
(tanka, haiku, and statement from General Koichiro Matsuura)



The word Manitoba means "the spirit who speaks." The name originated from the Aboriginal belief that a spirit spoke through the rushing waters of the currents of Lake Manitoba Narrows against the shore of Manitou Island.

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 2.1.2 Use standard Canadian spelling...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.3.1 Use the structures and language features...

SLO 6.2.3 Use grouping of items to classify...

SLO 6.2.7 Use elaboration...

SLO 6.2.9 Use summarization...

SLO 6.3.1 Use questioning for clarification...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Sequence 2

Because of its importance, people have had numerous conflicts over access to water. Students work individually or in groups with the suggested reading. Because so many conflicts are listed, you may want to do this as a Jigsaw activity, dividing the timeline into parts, one part per group.

Students skim their sections, noting the reasons for the conflicts and the areas of the world in which they took place. Each group chooses from its area three to five conflicts the group members feel are important, and the group prepares to discuss them. Students note vocabulary, especially vocabulary that describes conflicts and solutions. They may discover this vocabulary as they read, or you may want to introduce this first. Vocabulary will be recycled throughout the module.

Next, students create a timeline to record the main dates and descriptions of conflicts they have chosen. They will add any additional conflicts with which they may be familiar. (Point out the use of simple present tense in the list of conflicts and their dates—historical information.) Ask students to come together to create a master timeline of their chosen conflicts, and to discuss events. What have been the main causes for conflict over water? What have they been in the students' countries of origin? Have these causes changed over time?

Language Features

Vocabulary

Water vocabulary: irrigation, river basins, watersheds, sanitation, desalination plans, canals, floods, aqueduct, gate valve, dikes, dams, reservoirs

Conflict/solution vocabulary: controversy, clashed, arbitrary, disputes, conflicts, escalated, inequitable, strife, competition, scarce, intensifies, contested, erupt, disrupting

Solutions: negotiations, ease of tensions, coalition, diplomacy, rule out, settlement, long-/short-term agreement, quell opposition

Idioms: cut off (water supply), rule out (solutions)

Structures

use of simple present in presenting conflicts and dates

Student Learning Tasks**Jigsaw Activity**

Skim your section, noting the reasons for the conflicts and the areas of the world in which they took place. (I)

Form a group with three or four other classmates. Each group chooses from their area three to five conflicts that group members feel are important. Be ready to discuss them and note vocabulary, especially vocabulary that describes conflicts and solutions.

Create a timeline to record the main dates and descriptions of conflicts your group has chosen. Add any additional conflicts you may be familiar with. (II)

Create a master timeline of your chosen conflicts, and discuss questions posed by the teacher. (III)

Teacher Notes and References

Suggested Reading: "Water Conflict Chronology" at:

<<http://worldwater.org/conflict.htm>>

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.13 Use developing control of grammatical features...

SLO 2.2 Use several visual techniques...

SLO 4.2 Communicate effectively to work with others...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Sequence 3

Ask students: Where will the water shortages be in the future? Students examine the graphics in **Handout 2-18: "The World's Freshwater Supplies"** and **Handout 2-19: "Water Stress,"** using imagery to help understand the magnitude of the projected water shortages by 2025. In groups of two or three, they analyze the maps. Ask students to create and share sentences to explain the pictorial information presented on the maps.

Question students about possible causes of these water shortages. Ask them about possible and specific impacts of this problem in their own countries, and record answers.

Students explain the maps in as many ways as they can, using newly acquired language from this lesson. Students also use the chart to make predictions and inferences in order to draw some conclusions.

Language Features

Vocabulary

Map terms: directions, abundant, limited, scarce, stressed, aquifers, concentrated, isolated, arid, Third World, industrialized, declined, increased, depleted, natural sources, per capita, access, positive trend, mismanagement, economic, political, abundant, shortages, etc.

Math terms: doubled, tripled, increased, decreased

Structures

Future tense, comparative, superlative forms, hypothetical expressions: if~then; modals: might, could, etc.

Student Learning Tasks**Assignment**

- a) In groups of two or three, analyze the maps in **Handout 2-18**: "The World's Freshwater Supplies: Annual Renewable Supplies per Capita per River Basin," and **Handout 2-19**: "Water Stress," using imagery to help understand the magnitude of the projected water shortages by 2025.
- b) Create and share sentences to explain the pictorial information presented on the maps. (■)
- c) Discuss the possible and specific impacts of this problem in your own home countries. (■)
- d) Explain the map in as many ways as you can using newly acquired language from this lesson. Make predictions and inferences, using the chart in order to draw some conclusions. (■)

Teacher Notes and References

Handout 2-18: "The World's Freshwater Supplies"

Handout 2-19: "Water Stress"

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts...

SLO 2.4 Use the steps of the writing process...

SLO 3.1 Seek, organize, and synthesize information...

SLO 3.2 Develop and implement a plan for researching...

SLO 3.3 Quote from or refer to sources...

SLO 4.1 Use language to encourage...

SLO 6.1.1 Use advanced organization...

SLO 6.1.2 Use organizational planning...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.1 Use resourcing to access...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Writing Activity

Students research one water conflict that interests them or that has occurred in their country of origin, and write a 250- to 300-word summary report on that topic. They should briefly cover the following areas: problem, possible solutions, and the future. Students are required to use at least seven new vocabulary words and include at least three statistics. They must appropriately quote from and cite their sources. Use the writing process.

Language Features

Discourse Features

format of a summary

paragraph structure (review)

citation rules (review)

Student Learning Tasks**Assignment**

a) Research one water conflict that interests you or that has occurred in your home country.

b) Write a 250- to 300-word summary report.

Cover the following areas: problem, possible solutions, and the future.

Use at least seven new vocabulary words and include at least three statistics.

Quote from and cite your sources, and use the writing process.

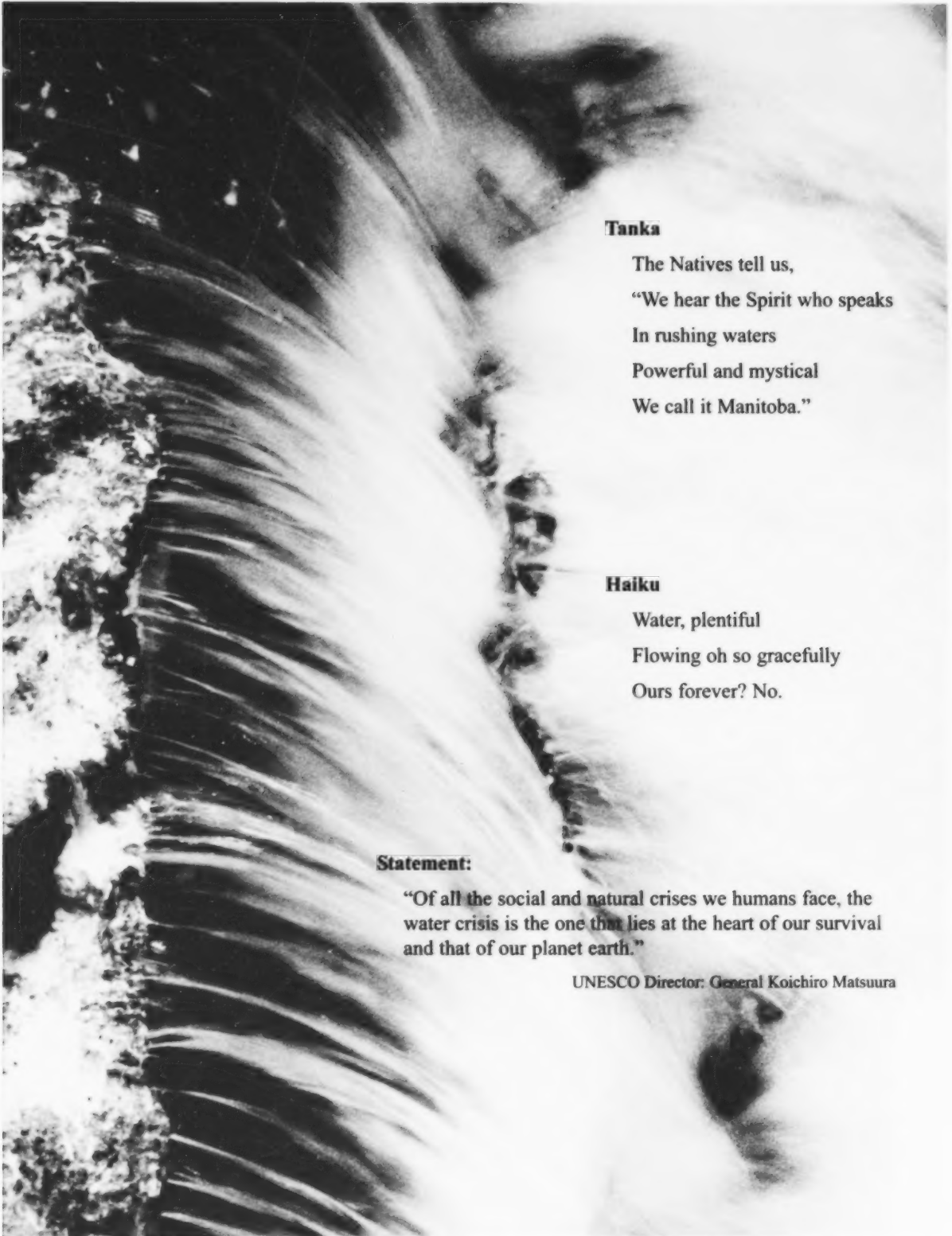
(1)

Teacher Notes and References**Appendix 2: How to Create a Summary**

Prepare a list of possible links for students to use for their research.

Review how to quote and cite sources. Remind students how to collect information without plagiarizing.

Water Poetry



Tanka

The Natives tell us,
“We hear the Spirit who speaks
In rushing waters
Powerful and mystical
We call it Manitoba.”

Haiku

Water, plentiful
Flowing oh so gracefully
Ours forever? No.

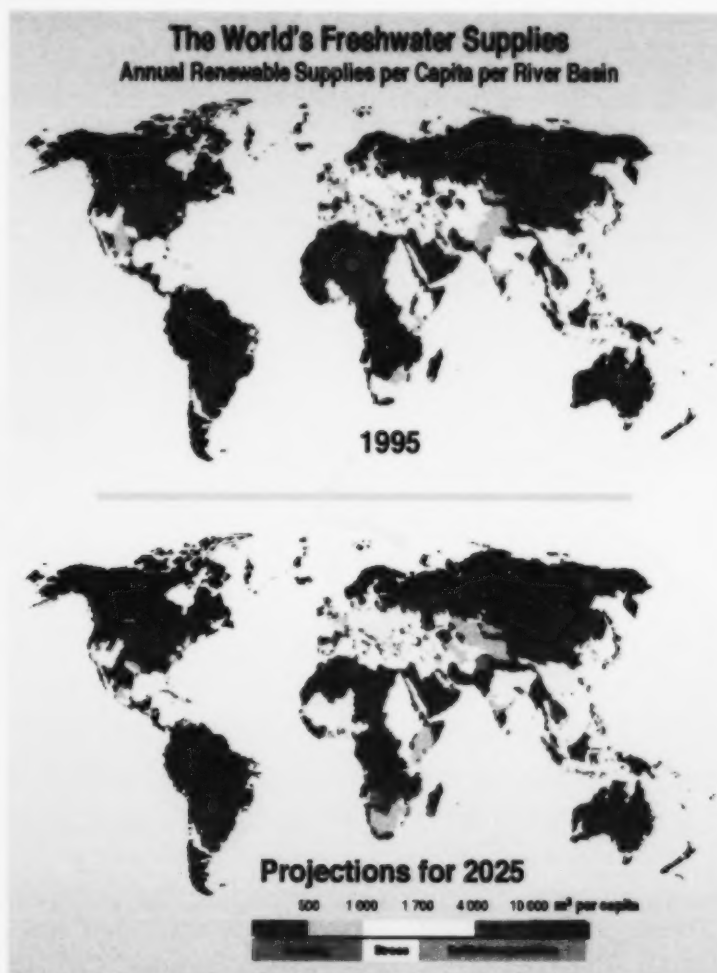
Statement:

“Of all the social and natural crises we humans face, the water crisis is the one that lies at the heart of our survival and that of our planet earth.”

UNESCO Director: General Koichiro Matsuura



The World's Freshwater Supplies



North America		Europe		Asia and Australia	
	m³ per capita per year		m³ per capita per year		m³ per capita per year
1 Yukon	1 249 832	25 Danube	2 519	13 Volga	4 260
2 Mackenzie	406 243			14 Ob	14 937
3 Nelson	15 167	Africa and West Asia		15 Yenisey	79 063
4 Mississippi	8 973	8 Niger	4 076	16 Lena	151 359
5 St. Lawrence	9 095	9 Lake Chad Basin	7 922	17 Kolyma	722 456
		10 Congo	22 752	18 Amur	4 917
South America		11 Nile	2 207	19 Ganges and Brahmaputra	-
6 Amazon	273 767	12 Zambezi	-	20 Yangtze	2 266
7 Paraná	8 025	26 Orange	1 050	21 Murray Darling	-
		24 Euphrates and Tigris	2 189	22 Huang He	361
				23 Indus	830

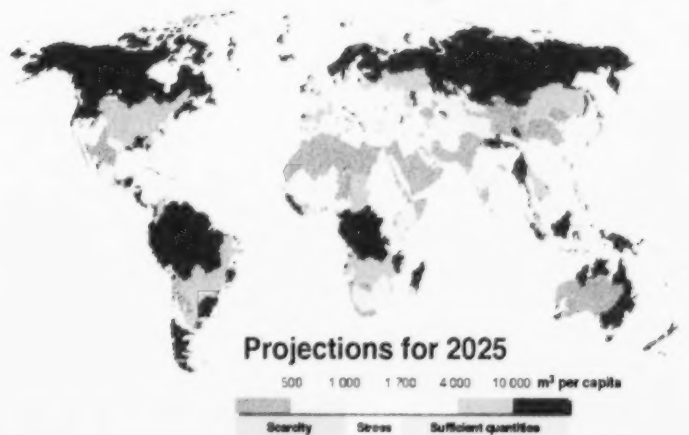
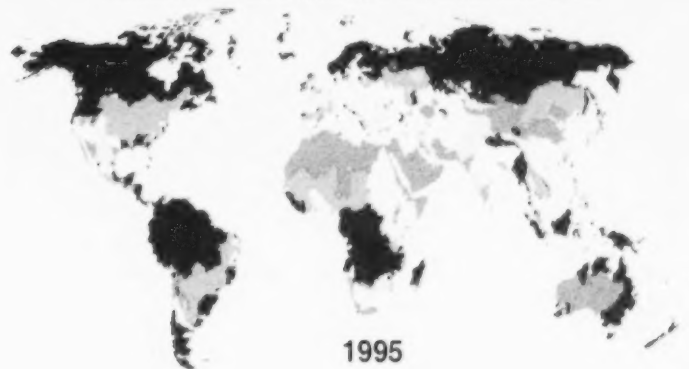
Source: Revenga et al. 2000, from Pilot Analysis of Global Ecosystems: Freshwater Systems

Although the absolute quantities of freshwater on Earth have remained approximately the same, the uneven distribution of water and human settlement continues to create growing problems of freshwater availability and accessibility.



The World's Freshwater Supplies

The World's Freshwater Supplies Annual Renewable Supplies per Capita per River Basin



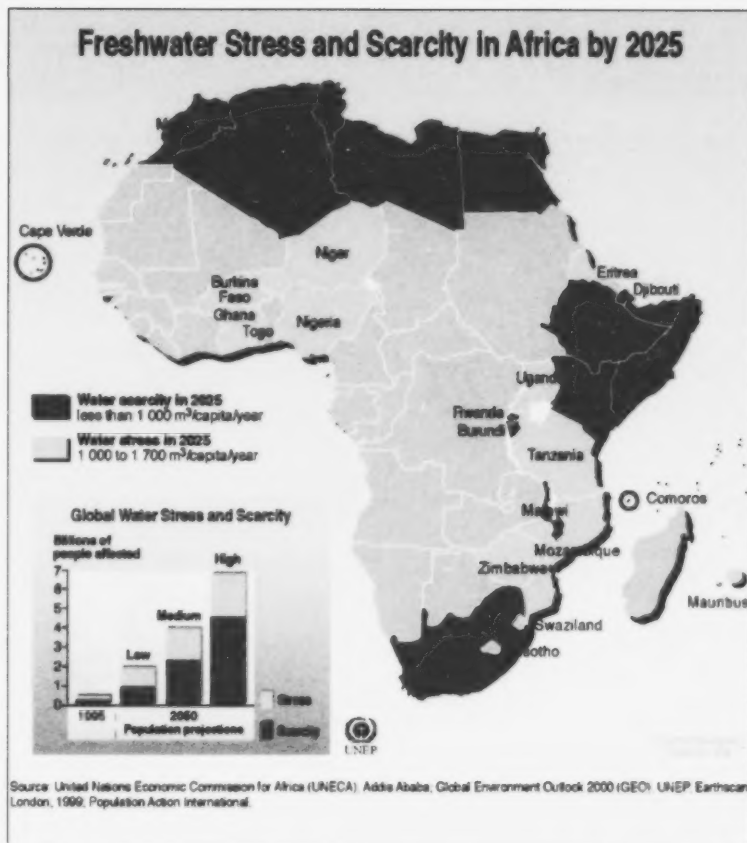
North America		Europe		Asia and Australia	
	m ³ per capita per year		m ³ per capita per year		m ³ per capita per year
1 Yukon	1 249 832	25 Danube	2 519	13 Volga	4 290
2 Mackenzie	406 243			14 Ob	14 937
3 Nelson	15 167	Africa and West Asia		15 Yenisey	79 083
4 Mississippi	8 973	8 Niger	4 076	16 Lena	161 359
5 St. Lawrence	9 095	9 Lake Chad Basin	7 522	17 Kolyma	722 456
		10 Congo	22 752	18 Amur	4 517
		11 Nile	2 207	19 Ganges and Brahmaputra	-
South America		12 Zambezi	1 050	20 Yangtze	2 295
6 Amazon	273 767	26 Orange	2 169	21 Murray Darling	-
7 Paraná	8 025	24 Euphrates and Tigris	-	22 Huang He	361
				23 Indus	630

Source: Revenga et al. 2000, from Pilot Analysis of Global Ecosystems: Freshwater Systems

Although the absolute quantities of freshwater on Earth have remained approximately the same, the uneven distribution of water and human settlement continues to create growing problems of freshwater availability and accessibility.



Water Stress



According to Population Action International, based upon the UN Medium Population Projections of 1998, more than 2.8 billion people in 48 countries will face water stress or scarcity conditions by 2025. Of these countries, 40 are in West Asia, North Africa or Sub-Saharan Africa. Over the next two decades, population increases and growing demands are projected to push all the West Asian countries into water scarcity conditions. By 2050, the number of countries facing water stress or scarcity could rise to 54, with their combined population being 4 billion people—about 40% of the projected global population of 9.4 billion (Gardner-Outlaw and Engleman, 1997; UNFPA, 1997).

- Many African countries, with a population of nearly 200 million people, are facing serious water shortages. By the year 2025, it is estimated that nearly 230 million Africans will be facing water scarcity, and 460 million will live in water-stressed countries (Falkenmark, 1989).

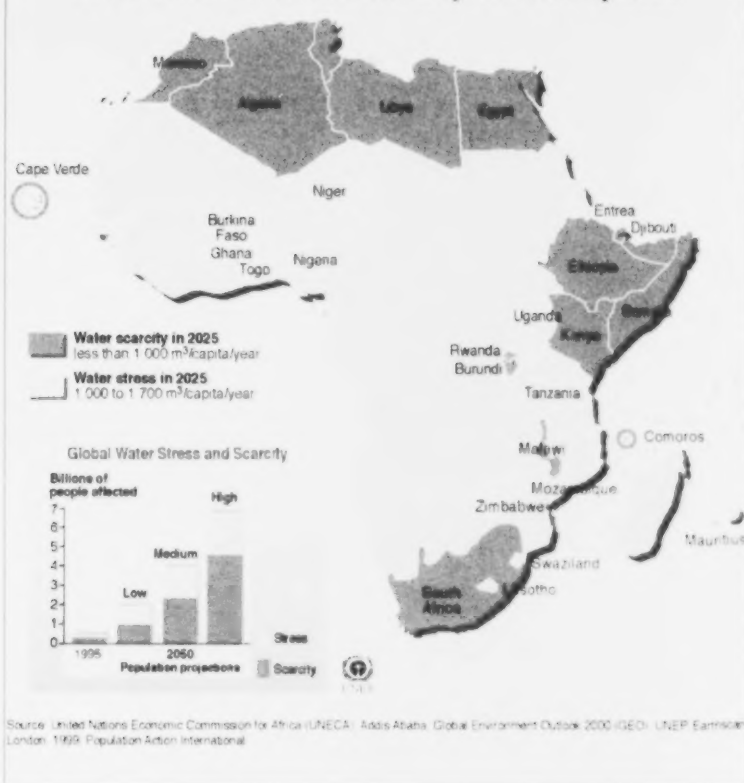
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- Today 31 countries, accounting for less than 8% of the world's population, face chronic freshwater shortages. Among the countries likely to run short of water in the next 25 years are Ethiopia, India, Kenya, Nigeria and Peru. Parts of other large countries (e.g., China) already face chronic water problems (Hinrichsen et al., 1998; Tibbetts, 2000).
- Bahrain, Kuwait, Saudi Arabia and the United Arab Emirates have resorted to the desalinization of seawater from the Gulf. Bahrain has virtually no freshwater (Riviere, 1989). Three-quarters of Saudi Arabia's freshwater comes from fossil groundwater, which is reportedly being depleted at an average of 5.2 km³ per year (Postel, 1997).



Water Stress

Freshwater Stress and Scarcity in Africa by 2025

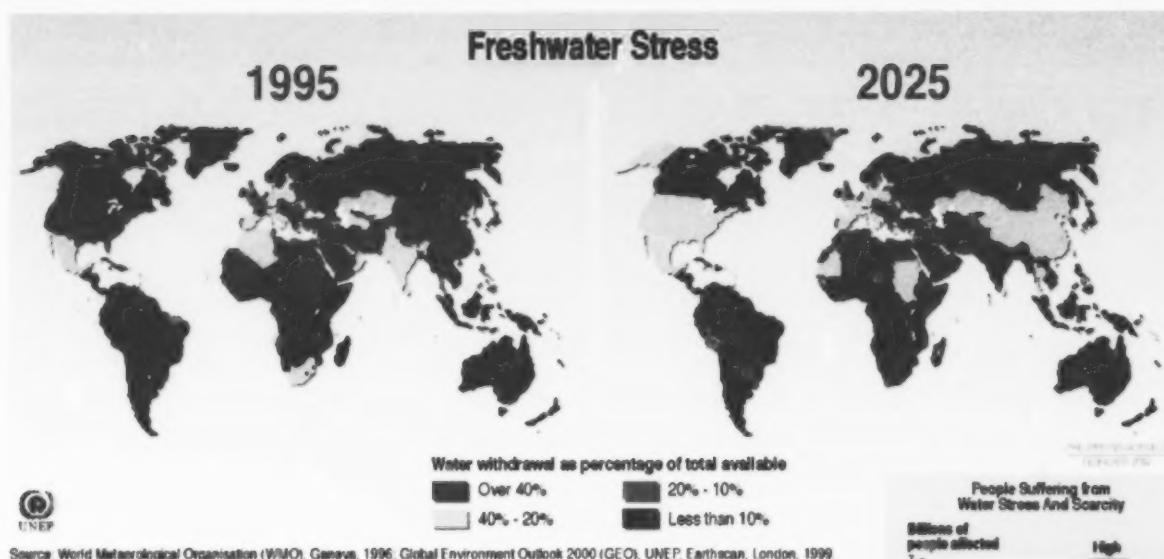


According to Population Action International, based upon the UN Medium Population Projections of 1998, more than 2.8 billion people in 48 countries will face water stress or scarcity conditions by 2025. Of these countries, 40 are in West Asia, North Africa or Sub-Saharan Africa. Over the next two decades, population increases and growing demands are projected to push all the West Asian countries into water scarcity conditions. By 2050, the number of countries facing water stress or scarcity could rise to 54, with their combined population being 4 billion people—about 40% of the projected global population of 9.4 billion (Gardner-Outlaw and Engleman, 1997; UNFPA, 1997).

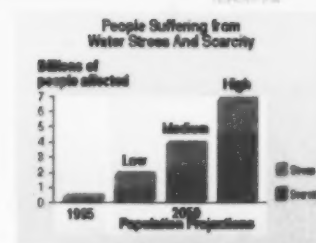
- Many African countries, with a population of nearly 200 million people, are facing serious water shortages. By the year 2025, it is estimated that nearly 230 million Africans will be facing water scarcity, and 460 million will live in water-stressed countries (Falkenmark, 1989).

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Water Stress (continued)

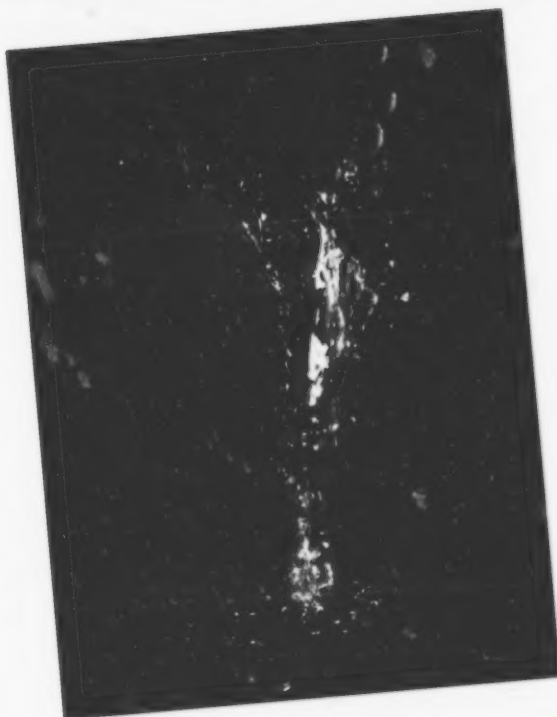


Some 460 million people—more than 8% of the world's population—live in countries using so much of their freshwater resources that they can be considered highly water stressed (UNCSD, 1999; WMO 1997). A further 25% of the population lives in countries approaching a position of serious water stress (WMO, 1997). Water scarcity occurs when the amount of water withdrawn from lakes, rivers or groundwater is so great that water supplies are no longer adequate to satisfy all human or ecosystem requirements, resulting in increased competition between water users and demands.

**Definitions of Water Stress and Scarcity**

An area is experiencing water stress when annual water supplies drop below 1,700 m³ per person. When annual water supplies drop below 1,000 m³ per person, the population faces water scarcity.

Sources: UNPD, UNEP, World Bank, and WRI. 2000.



Topic 3B

**Clean Water: Some
Solutions**

(1–2 lessons)

This lesson focuses on four different solutions to the problem of available clean water. Students will review information introduced in the last lesson, use a map to suggest possible solutions to water problems, complete a Jigsaw activity composed of reading and answering questions about water problem solutions, and write to express a personal opinion

concerning the best solution. Some of the academic tasks are: skimming and scanning; making notes; pronunciation; defining terms; illustrating a point; giving examples; explaining, describing, and comparing ideas; noting important markers; selectively extracting important points; and listening critically.

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.5 Examine and interpret various visual media...

SLO 4.1 Use language to encourage...

SLO 4.2 Communicate effectively to work with others...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence**Sequence 1****Activation**

Students have discussed the shortage of clean, available water and have hypothesized about what some of the effects of this shortage might be. Post their main ideas and the timeline from the previous lesson. Ask students to look once again at the map from the previous lesson. Which word introduced in the last lesson will describe the water situation projected year 2025 in their country of origin: abundant, limited, scarce, or stressed?

Ask students to suggest any possible solutions for water-stressed areas of the world. Discuss.

Language Features**Vocabulary**

Terms related to the amount of available water:
abundant, limited, scarce, stressed

Discourse Features

markers to show problem/cause~impact/effect, and solutions

Student Learning Tasks**Teacher Notes and References****Assignment**

- a) Review the map **Handout 2-18: "The World's Freshwater Supplies"** to describe your home country's projected water situation in the year 2025: abundant, limited, scarce, or stressed.
- b) Suggest and discuss any possible solutions for water-stressed areas of the world. (C)



Map from the previous lesson
(**Handout 2-18: "The World's
Freshwater Supplies"**)

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.1.1 Analyze and edit texts...

SLO 2.1.2 Use standard Canadian spelling...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.3.1 Use the structures and language features...

SLO 4.1 Use language to encourage...

SLO 4.2 Communicate effectively to work with others...

SLO 6.1.2 Use organizational planning...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.1 Use resourcing to access...

SLO 6.2.7 Use elaboration...

SLO 6.2.11 Use transfer...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Sequence 2

Jigsaw: Part 1. Tell students they will be completing a Jigsaw activity. Divide the students into four equal Home Groups. Each group will get a complete list of focus questions and one of the handouts, each of which contains one solution to the water problems. Each group's solution will be different. To complete the whole list of focus questions, information from all the handouts must be shared among groups.

Jigsaw: Part 2. Have students regroup into Expert Groups to read all the focus questions and (by previewing the article) decide which questions they think their article might answer. Reading aloud, they skim their solution, reading the title, the whole introduction and conclusion, and the topic sentences of all the other paragraphs, predicting in which sections of the article they will find the answers to their focus questions.

Next, have students scan the article using the focus questions to help them locate the key words that will help them find the answers, coming to an agreement on the answers. Finally, they answer the focus questions related to their article in complete sentences/short paragraphs.

Language Features

Vocabulary

Imperative verbs used in focus questions: define, explain, describe, evaluate, list, hypothesize

Idioms: waste not, want not; sweating the small stuff; go green

From the focus questions: imminent, implement, concurrently, conservation, reclaimed water, desalination, reverse osmosis, initial

specific vocabulary from articles needed to answer questions

Pronunciation

focus on pronunciation (sounds, linkage, reduction) that is problematic for students

Discourse Features

expressions to acknowledge, to agree, to disagree, to ask for clarification

Student Learning Tasks**Assignment****Jigsaw Activity: Four Equal Home Groups:**

- Read the focus questions and preview the article to decide which questions you think your article might answer.
(They regroup into Expert Groups here)
- Read aloud, skimming the title, the whole introduction and conclusion, and the topic sentences of all the other paragraphs, predicting in which sections of the article the answers to your focus questions will be found.
- Scan the article using the focus questions to locate the key words leading to the answers, coming to an agreement on the answers.
- Answer the focus questions related to your article in complete sentences/short paragraphs. (6)

Teacher Notes and References

Handout 2-20: "Approach #1: Seek New Sources: Sweating the Small Stuff"

Handout 2-21: "Approach #2: Redistribute Supplies: Bagged and Dragged"

Handout 2-22: "Approach #3: Leaking Away"

Handout 2-23: "Approach #4: Recycle: Waste Not, Want Not" (one article per group)

Handout 2-24: "Examples of Focus Questions: Water: Some Solutions"

The focus questions are suggestions only. They are designed to give more practice in academic writing tasks such as explaining cause/effect, describing positive and negative aspects, writing definitions, explaining a process, giving examples, et cetera.



The solutions are written at a very advanced level. In this part of the lesson, students will focus on the fact that it is not always necessary to understand an article in detail to complete certain academic tasks. For the academic task of this lesson, they are only required to skim and scan.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 2.3.1 Use the structures and language features...

SLO 2.3.3 Produce effective oral presentations.

SLO 4.1 Use language to encourage...

SLO 4.2 Communicate effectively to work with others...

SLO 4.4 Manage group action...

SLO 6.1.3 Use directed attention...

SLO 6.2.4 Use note taking...

SLO 6.3.1 Use questioning for clarification...

Instructional and Learning Sequence

Have the Home Groups work to complete all the focus questions in point form. New vocabulary necessary to answer the questions should be shared and explained. Ask students to listen to each other to get the information they need to answer their questions. Finally, have students answer all the questions in sentences or short paragraphs.

Language Features**Discourse Features**

expressions for hesitating, for asking for restatement, for probing, for agreeing, for disagreeing

Student Learning Tasks**Assignment**

- a) Listen and take notes as each member shares information needed to answer the focus questions. (II)
- b) Answer all questions in complete sentences or short paragraphs. (I)

Teacher Notes and References

Once all the groups have completed their tasks, divide the class into new groups of four. Each member of the new group has the answers from a different solution.



The following SLOs from the previous part of the assignment should also be considered here: SLOs: 6.1.5, 6.1.6, 6.1.8, 6.2.12

Outcomes

SLO 2.1.1 Analyze and edit texts...

SLO 2.1.2 Use standard Canadian spelling...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.3.1 Use the structures and language features...

SLO 2.4 Use the steps of the writing process...

SLO 4.1 Use language to encourage...

SLO 6.1.1 Use advanced organization...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.7 Use problem identification...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.5 Use deduction and induction...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence**Writing Task**

Personal opinion: Which of the solutions to the water crisis is most important and why? Have each student choose a solution that is important to him or her and answer the question in a formal paragraph, using at least five new vocabulary words from this or other lessons. Ask students to use writing process strategies.

The skills required for this activity should help prepare students for the culminating task of the module.

Language Features**Discourse Features**

topic sentence

organizing markers

concluding sentence

well-chosen vocabulary

appropriate transition markers

Student Learning Tasks**Teacher Notes and References****Assignment**

Choose a solution that is important to you.

- a) Answer the question in a formal paragraph.
- b) Use at least five new vocabulary words from this or other lessons.
- c) Use writing process strategies. (I)

Approach #1: Seek New Sources Sweating the Small Stuff

A water-covered planet facing a water crisis seems paradoxical. And yet that is exactly the reality on planet Earth, where 97 percent of the water is too salty to quench human thirst or to irrigate crops. Tackling water shortage issues with desalination—drawing fresh, drinkable water out of salty seawater—is common in the desert nations of the Middle East, the Caribbean and the Mediterranean. But as the cost of desalination drops and the price and demand for water climb, countries in temperate regions are turning more and more to the sea.

Large-scale desalination facilities are even turning up in the U.S., one of the world's most water-rich countries. As part of an ambitious plan to reduce pumping from depleted underground aquifers, water officials in the Tampa Bay, Fla., area are contracting the construction of a desalination plant capable of producing 25 million gallons of desalted water a day. They are relying on desalination to supplement the region's future water demands. Houston is also looking at desalinating water from the Gulf of Mexico to keep from going dry.

People have been pulling freshwater out of the oceans for centuries using technologies that involve evaporation, which leaves the salts and other unwanted constituents behind. Salty source water is heated to speed evaporation, and the evaporated water is then trapped and distilled.

This process works well but requires large quantities of heat energy, and costs have been prohibitive for nearly all but the wealthiest nations, such as Kuwait and Saudi Arabia. (One exception is the island of Curaçao in the Netherlands Antilles, which has provided continuous municipal supplies using desalination since 1928.) To make the process more affordable, modern distillation plans recycle heat from the evaporation step.

A potentially cheaper technology called membrane desalination may expand the role of desalination worldwide, which today accounts for less than 0.2 percent of the water withdrawn from natural sources. Membrane desalination relies on reverse osmosis—a

process in which a thin, semipermeable membrane is placed between a volume of saltwater and a volume of freshwater. The water on the salty side is highly pressurized to drive water molecules, but not salt and other impurities, to the pure side. In essence, this process pushes freshwater out of saltwater.

Most desalination research over the past few years has focused on reverse osmosis, because the filters and other components are much smaller than the evaporation chambers used in distillation plants. Reverse osmosis plants are also more compact and energy-efficient.

Although reverse osmosis plants can offer energy savings, the earliest membranes, made from either polyimide fibers or cellulose acetate sheets, were fragile and had short life spans, often no longer than three years. These materials are highly susceptible to contaminants in the source water—particularly chlorine, which hardens the membranes, and microbes, which clog them. Pretreatment regimes, such as filtering out sediments and bacteria, must be extremely rigorous. A new generation of so-called thin composite membranes, made from polyimide films, promises to eliminate these problems. Though still susceptible to contamination, these new membranes are sturdier, provide better filtration and may last up to 70 years.

Technical performance is important, but it alone does not drive the adoption of desalination as a source of clean water. With or without technical improvements, the market for desalination equipment will very likely show healthy growth in the next 10 years as cities and other consumers realize the potential and favourable economics of existing equipment, according to James D. Birkett, who runs West Neck Strategies, a private desalination consulting company based in Nobleboro, Me.

Hundreds of suppliers are already selling many thousands of pieces of equipment annually. These desalination units range in capacity from a few gallons a day (small emergency units for life rafts) to several million gallons a day (municipal systems). "So confident are the suppliers that they enter into

(continued)

**Approach #1: Seek New Sources
Sweating the Small Stuff (continued)**

long-term contracts with their customers," Birkett says, "thus assuming themselves the risks of performance and economics." The desalination plant on Tampa Bay, scheduled to be operational by the end of 2002, will be funded and operated in such a manner.

Today the best estimate is that about 1 percent of the world's drinking water is supplied by 12,500 desalination plants. No doubt, this is only the beginning. In the future, the water in your glass may have originated in the seas.

Approach #2: Redistribute Supplies Bagged and Dragged

Pipelines make it possible to move freshwater cheaply over vast distances of land. If only the same were possible over the oceans. Dragging waterproof plastic or fabric containers behind tugboats may be the answer.

Beginning in 1997, the English company Aquarius Water Trading and Transportation Ltd. has towed water from mainland Greece to nearby resort islands in enormous polyurethane bags, helping the tourist destinations deal with increased demand for drinking water during the peak season. Another company, Nordic Water Supply in Oslo, Norway, has made similar deliveries from Turkey to northern Cyprus using their own fabric containers.

The seemingly far-fetched concept of water bags was born in the early 1980s out of the desire to move large amounts of water more cheaply than modified oil tankers can do. For many years, tankers and barges have been making deliveries to regions willing to pay premium prices for small amounts of freshwater, such as the Bahamas, Cyprus and other islands with inadequate sources. Tankers have also supplied water during short-term droughts and disasters such as the 1995 Kobe earthquake in Japan.

Aquarius has manufactured eight 790-ton bags and two 2,200-ton versions; the latter hold about half a million gallons of water each. Aquarius has also developed models that are 10 times larger than the ones in use today, and last year Nordic began manufacturing bags that can hold nearly eight million gallons.

Water bags could offer a less expensive alternative to tankers—bags in the Aquarius fleet cost anywhere from \$125,000 to \$275,000—but some technical problems remain. In particular, making such large bags that are capable of withstanding the strains of an ocean voyage is difficult. For freshwater deliveries to the Greek isles and to Cyprus, bags need be dragged no farther than 60 miles. The piping systems needed to connect the bags to water supplies on land can be built from existing technology, but bags have ripped during transport on several occasions.

A third water-bag inventor, Terry G. Spragg of Manhattan Beach, Calif., is solving the problems of both volume and towing in a different way. With the support of privately hired scientists and consultants, Spragg has patented specialized zippers, with teeth more than an inch long, that can link water bags like boxcars. He has demonstrated the technology but has yet to sell it for commercial use.

Thus far this technology has been used only for freshwater deliveries to emergency situations and to extremely water-scarce coastal regions with a reliable demand for expensive water. But for some communities with no other option, water bags may offer a new and clever solution.



Approach #3: Reduce Demand Leaking Away

New York City is a metropolis of flamboyant excess, except when it comes to water. No one would suspect it, but the Big Apple has clamped down on water wasters, and after 10 years of patching leaky pipes and replacing millions of water-guzzling toilets, the city is now saving billions of gallons of water every year.

Back in the early 1990s New York City faced an imminent water shortage, and it was getting worse with every flush, shower and tooth brushing. With an influx of new residents and an increase in the number of drought years, the city needed to find an extra 90 million gallons of water a day—about 7 percent of the city's total water use. Instead of spending nearly \$1 billion for a new pumping station along the Hudson River, city officials opted for a cheaper alternative: reduce the demand on the current water supply, which was piped in from the Catskill Mountains.

Officials knew that persuading New Yorkers to go green and conserve water would require some enticement—free toilets. The city's Department of Environmental Protection (DEP) stepped in with a three-year toilet rebate program which began in 1994. With a budget of \$295 million for up to 1.5 million rebates, the ambitious scheme set out to replace one third of the city's inefficient toilets—those using more than five gallons of water per flush—with water-saving models that do the same job with only 1.6 gallons per flush. With the rebate program, the DEP hoped to meet the largest part of its water-savings goal.

New Yorkers embraced the plan. Some 20,000 applications arrived within three days of its start. By the time the program ended in 1997, low-flow toilets had replaced 1.33 million inefficient ones in 11,000 buildings. The result: a 29 percent reduction in water use per building per year. The DEP estimates that low-flow toilets save 70 million to 90 million gallons a day citywide—enough to fill about 6,700 Olympic-size swimming pools.

But more efficient flushes weren't enough. The toilet rebate program happened concurrently with the city's water audit program, which continues today. For much of the city's history, the amount building owners paid for water was based on the size of their property. Following a law passed in 1985, however, the city began keeping tabs on water use and charging accordingly. The law dictated that water meters be installed during building renovations, and the same requirement was applied to construction of new homes and apartments beginning in 1988. As of 1998, all properties in the city must be metered.

Homeowners who want to keep their water bills down under the new laws can request a free water-efficiency survey from Volt VIEWtech, the company that oversees the city's audit program. Inspectors check for leaky plumbing, offer advice on retrofitting with water-efficient fixtures and distribute free faucet aerators and low-flow showerheads.

Low-flow showerheads use about half as much water as the old ones, and faucet aerators, which replace the screen in the faucet head and add air to the spray, can lower the flow of water from four gallons a minute to less than one gallon a minute. Volt VIEWtech has made several hundred thousand of these inspections, saving an estimated 11 million gallons of water a day in eliminated leaks and increased efficiency.

In efforts to save even more water, New York City has gone outside the home and into the streets. Water officials have installed magnetic locking caps on fire hydrants to keep people from turning them on in the summer. The city is also keeping an eye underground by using computerized sonar equipment to scan for leaks along all 32.6 million feet (6,174 miles) of its water mains.

Although the city's population continues to grow, per person water use in New York dropped from 195 to 169 gallons a day between 1991 and 1999. From all indications, this trend is following its upward path. Water conservation works. And New Yorkers are proving that every flush makes a difference.



Approach #4: Recycle Waste Not, Want Not

Namibia is the driest African country south of the Sahara Desert. Blistering heat evaporates water faster than rains can rejuvenate the parched landscape, and there are no year-round rivers. Residents of the capital city, Windhoek, must do more than just conserve water to secure a permanent supply. They must reuse the precious little they have.

By the end of the 1960s, most underground aquifers and reservoirs on seasonal rivers near Windhoek had been tapped dry by the capital's burgeoning population, which has grown from 61,000 to more than 230,000 in the past 30 years. Transporting water from the closest permanent river, the Okavango—some 400 miles away—was too expensive. This crisis inspired city officials to implement a strict water conservation scheme that includes reclaiming domestic sewage and raising it once again to drinkable standards.

The city's first reclamation plant, initially capable of producing only 460 million gallons of clean water per year when it went on line in 1968, is now pumping out double that amount enough to provide about 23 percent of the city's yearly water demands. Officials hope to boost that supply number to 51 percent with an upcoming facility now under construction.

To make wastewater drinkable, it must undergo a rigorous cleaning regimen. First, large solids are allowed to settle out while biofilters remove smaller organic particles. Advanced treatments remove ammonia, and carbon and sand filters ensure that the last traces of dissolved organic material are eliminated. The final step is to purify the water by adding chlorine and lime. To guarantee a safe drinking supply, the reclaimed water is tested once a week for the presence of harmful bacteria, viruses and heavy metals. (Industrial effluent laden with toxic chemicals is diverted to separate treatment plants.) Compared with local freshwater sources, the reclaimed water is equal or better in quality.

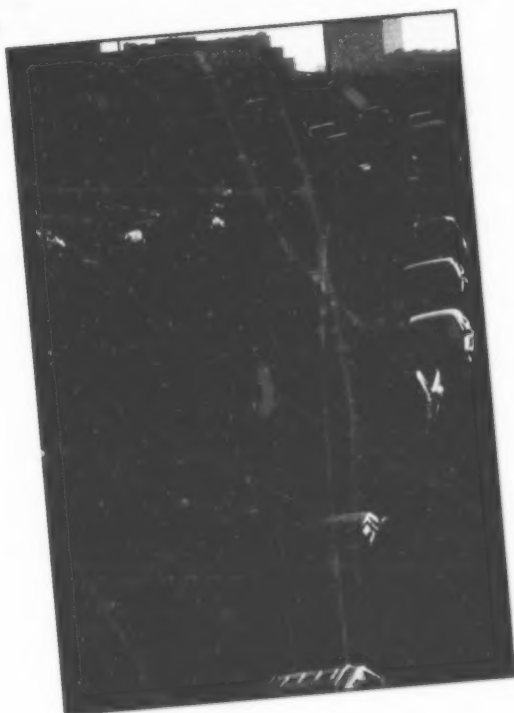
Despite 32 years of access to high-quality recycled water, the residents of Windhoek still doggedly oppose its use for personal consumption. For this reason, most of this purified wastewater irrigates parks and gardens. But sometimes people don't have a choice about their water source. In times of peak summer demand or during emergencies such as drought, local freshwater reservoirs are strained, and Windhoek relies heavily on treated effluent to boost supply. During the drought of 1995, for instance, reclaimed water accounted for more than 30 percent of the clean water piped into homes.

Officials hope to bolster support for the recycling program through enhanced public education—like letting the word slip that besides irrigating the city's greenery, treated wastewater is the secret ingredient in the prized local brew.

Examples of Focus Questions:
Water: Some Solutions

1. Explain why there was an imminent water shortage in New York in the early 1990s.
2. How were New Yorkers convinced to “go green?” Discuss the plan in a few sentences.
3. What else did the city do concurrently to help conserve water? Explain the program.
4. What is Volt VIEWtech?
5. What statistical evidence is there that New York’s water conservation plans were successful?
6. Although 97 percent of the earth is water, much of it cannot be used. Why not?
7. Define the term *desalination*. Describe the process.
8. What is reverse osmosis? What are the pros and cons of this process?
9. Eventually, what percentage of the world’s drinking water will be supplied by desalination?
10. After skimming and scanning the article, what do you think “Sweating the Small Stuff” means?
11. What does the expression “bagged and dragged” refer to? Where has this process begun to occur? Why?
12. Explain the initial reason for the development of water bags.
13. Evaluate these water bags as a useful invention.
14. What do you think the expression “waste not, want not” means?
15. Describe the water problems facing Namibia, Africa.
16. Explain their solution to their problem.
17. What is the quality level of the reclaimed water? What has been the response of the people? Hypothesize why this is so.





Topic 4 Air Pollution

(2–3 lessons)

This lesson requires students to work with charts, make a graphic organizer, pronounce the names of chemical compounds, find the organizing features of a long reading, discuss or debate a controversial topic, paraphrase, express predictions, and solve mathematical word problems. Language features include a number of words from the

Academic Word List, as well as content words related to air pollution; definition pattern using relative clauses; synonyms; and structures for expressing the future, cause and effect, and possibilities.

Outcomes

SLO 4.1 Use language to encourage...

SLO 6.1.7 Use problem identification...

SLO 6.2.7 Use elaboration...

SLO 6.3.2 Use co-operation...

SLO 1.5 Examine and interpret various visual media...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 6.1.1 Use advanced organization...

SLO 6.1.3 Use directed attention...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.7 Use problem identification...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.2 Use repetition to imitate a language model...

Instructional and Learning Sequence

Sequence 1

Activation

This lesson will focus on some solutions for air pollution. Before we can solve the problem, we need to know exactly what the problem is. Discuss students' possible personal experiences with smog, and the causes of smog. Ask: What are the chemical components of urban air pollution? What do individuals do to avoid air pollution (e.g., masks, alerts, go to countryside)? What needs to be done to solve the problem for the long term?

Language Features

Vocabulary

Good definitions of terms associated with air pollution are found at <www.epa.gov/otaq/invtory/overview/definitions.htm>.

Good definitions of terms associated with pollution in general are found at <www.marine.usf.edu/pjoccean/packets/f00/f00u1vocab.pdf>.

Examine the chart and pie charts in **Handout 2-25: "Major Air Pollutants."**

Using the definition pattern given, have students make sentences about each pollutant listed in the first chart. Evaluate for information and language accuracy.

OR

The following activity may be done as a listening or a reading exercise, using **Handout 2-26: "Urban Air Pollution."**

Preparation: When we talk about the components of air pollution, what kinds of information do you expect to hear (e.g., effects, names of chemicals)?

Student Learning Tasks

Discuss personal experiences with smog, and the causes of smog. (C)

Using the definition pattern given in **Handout 2-25**: "Major Air Pollutants," make sentences about each pollutant listed in the first chart. (I)

OR

Before listening to or reading **Handout 2-26**: "Urban Air Pollution," predict the answer to the following question: When we talk about the components of air pollution, what kinds of information do you expect to hear? (I)

Teacher Notes and References



Visual: City with smog—many good pictures are available on the Internet (teacher-provided)



Handout 2-25: "Major Air Pollutants"

Handout 2-26: "Urban Air Pollution"



If necessary, model the first one: "Sulphur dioxide (SO_2) is a colourless gas with a pungent odour that causes irritation of the upper respiratory tract and eyes. It may lead to an increase in respiratory diseases."

Outcomes

SLO 2.1.1 Analyze and edit texts...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.2 Use repetition to imitate a language model...

SLO 2.2 Use several visual techniques...

SLO 6.1.2 Use organizational planning...

SLO 6.1.4 Use functional planning...

SLO 6.2.3 Use grouping of items to classify...

SLO 6.2.4 Use note taking...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.12 Use inferencing to guess the meanings...

Instructional and Learning Sequence

Draw a chart and let students decide how to label it (likely Pollutant, Description, and Effect on Health). Reread the paragraph and complete the chart. Compare the finished chart to the model, noting the omission of "small words" (articles, connectors, transition words, linking verbs) from the notes.

Optional: Add a column for the chemistry of each pollutant. Have students practise reading chemical equations.

Language Features

Pronunciation

chemical compounds

Discourse Features

point-form notes (for chart)

Read aloud, or have students skim the text in **Handout 2-26: "Urban Air Pollution."** Ask students what type of graphic organizer would help them take notes on the information (chart) Have students make notes on a chart.

Language Features

Vocabulary

effects, components, pollutants, SO_2 and other chemicals, components, compounds, suspended, visibility, particulates, significantly

suffixes: -less; -tion

Structures

reduced adjective phrase

sentence combining

Pronunciation

chemical compound names (e.g., SO_2)

Discourse Features

definition markers: x is/are a _____ that
_____; _____, also known as
_____; or _____

Student Learning Tasks

- a) Decide on the labels for the chart, then compare the finished chart to the model, noting the omission of "small words."
- b) Practise reading chemical equations. (C)

Listen to or skim **Handout 2-26: "Urban Air Pollution,"** for information. Decide on an appropriate type of graphic organizer that would help to record notes. (I) (C)

Teacher Notes and References**Handout 2-25: "Major Air Pollutants"**

Hydrocarbons come from fossil fuels such as gasoline.

**Handout 2-26: "Urban Air Pollution"**

This reading is at Flesch-Kincaid Grade 12 level.

Students will know the chemical compounds involved, but may not know how to say them in English.

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 1.5 Examine and interpret various visual media...

SLO 2.2 Use several visual techniques...

SLO 6.2.2 Use repetition to imitate a language model...

SLO 6.2.11 Use transfer...

SLO 6.2.13 Use recombination..

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Ask students: Where do these pollutants come from? With a partner, students analyze **Handout 2-27: "Projections and Analysis Chart."**

What is the major source of each pollutant? Ask students to make three statements based on the chart and share them with the class. What is the biggest single source of air pollution in Canada? (transportation)

Language Features

Vocabulary

combustion, power generation, miscellaneous, incineration, industrial processes, volatile organic compounds (carbon-based chemicals that vapourize easily at relatively low temperatures [e.g., pesticides and herbicides])

Student Learning Tasks

With a partner, analyze **Handout 2-27: "Projections and Analysis Chart,"** using the following questions as a guide:

- What is the major source of each pollutant?
- Make three statements based on the chart.
- What is the biggest single source of air pollution in Canada?
(P)

Share your answers with the class. (C)

Teacher Notes and References

Handout 2-27: "Projections and Analysis Chart"

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.4 Show an awareness of organizational patterns...

SLO 1.5 Examine and interpret various visual media...

SLO 1.7 Evaluate a given text...

SLO 2.1.1 Analyze and edit texts...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 2.2 Use several visual techniques...

SLO 4.1 Use language to encourage...

SLO 6.1.1 Use advanced organization...

SLO 6.1.3 Use directed attention...

SLO 6.1.5 Use selective attention...

SLO 6.2.3 Use grouping of items to classify...

SLO 6.2.4 Use note taking...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Sequence 2

Reading Extended Text

Introduce **Handout 2-28**: "Environmental Implications of the Automobile: (SOE Fact Sheet No. 93-1)"

- Source (government department—Environment Canada)
- Intended audience (general public)
- Purpose (to discuss the facts about this issue)
- Genre or form (fact sheet, one of many)
- Date (not given, but may be indicated by "No 93-1," or guessed by the dates of references and statistics. Why is the general date important?)

Student Instructions: See Student Learning Tasks column.

After students have read Handout 2-28, ask:

- How do the visuals (photos, charts, diagrams, et cetera) help the reader? If you are using the whole text, where in the text is each visual referred to?
- Have students, working with a partner, select three vocabulary words essential for understanding the reading, and prepare to explain them to the class.

If no one has chosen it, discuss the term "dilemma." What does a dilemma require? (difficult decision) Why is the car (paragraph 4) called an "environmental dilemma?"

Language Features

Vocabulary

student-selected

From AWL: affects, challenge, complex, considerable, consume, economy, elements, eliminate, energy, environmental, image, impact, impacts, implications, infrastructure, interactions, liberated, radically, range, ratios, resources, respond, significantly, source, stresses, sustainable, technology

Prefix: infra-

Metaphor: "tightly woven into the fabric of Canadian life"

Structures

use of present perfect in paragraph 1

Discourse Features

organization of a fact sheet
relationship of text and graphics

Academic Language Functions

skim for main idea

Student Learning Tasks

Refer to **Handout 2-28**: "Environmental Implications of the Automobile: (SOE Fact Sheet No. 93-1)" and:

- a) Look at the source, the intended audience, purpose, genre or form, and date. Answer the question: Why is the general date important? **(C)**
- b) Preview by reading the title, heading, and subheadings. Read the first and last paragraphs and the first and last sentences of each paragraph. Examine the visuals briefly. Formulate several questions that may be answered by the reading. **(I)**
- c) Skim the first five paragraphs to answer the question: Does the article support or oppose the use of automobiles? Explain. **(I)**
- d) With a partner, select three vocabulary words essential for understanding the reading and prepare to explain them to the class. **(P) (C)**

Teacher Notes and References

Handout 2-28: "Environmental Implications of the Automobile: (SOE Fact Sheet No. 93-1)"



The intent of this activity is for students to practise approaching a long article with a high reading level. You may choose to have students read the whole article, use a Jigsaw approach, or follow the suggested approach and look at the organizing principles without reading the whole article.

Outcomes

SLO 1.7 Evaluate a given text...

SLO 2.1.3 Use developing control of grammatical features...

SLO 4.6 Respond to and critique a variety of individual perspectives...

SLO 5.1 Identify common themes and symbols...

SLO 6.1.5 Use selective attention...

Instructional and Learning Sequence

Optional Speaking Activity

Instant Debate: Have half the students read for information in defence of the car in Canadian life, while the other half finds the effects on the environment. Write the points on the board in two columns.

Discuss which of the points reflect the situation in the students' countries of origin.

Language Features

Discourse Features

expression of opinion; agreement and disagreement

Academic Language Functions

scan for specific information

Student Learning Tasks

- a) Debate: Group 1 reads for information in defence of the car in Canadian life, while the other group finds the effects on the environment. (B) (C)
- b) Discuss the points that reflect the situation in your country of origin. (B) (C)

Teacher Notes and References

Outcomes	Instructional and Learning Sequence						
SLO 1.4 Show an awareness of organizational patterns... SLO 2.1 Show sufficient control over linguistic structures... SLO 2.1.1 Analyze and edit texts... SLO 2.3.2 Demonstrate increasing awareness of... rhetorical forms... SLO 4.1 Use language to encourage... SLO 6.1.3 Use directed attention... SLO 6.1.4 Use functional planning... SLO 6.1.5 Use selective attention... SLO 6.1.6 Use self-monitoring to check... SLO 6.2.1 Use resourcing to access... SLO 6.2.5 Use deduction and induction... SLO 6.2.6 Use substitution to select alternate approaches... SLO 6.2.12 Use inferencing to guess the meanings... SLO 6.3.2 Use co-operation...	Reading Extended Text (continued) After examining the introduction to the article, students should be able to find the thesis statement, likely the second sentence of paragraph 5. Present students with Handout 2-29: "Overhead—Environmental Implications of the Automobile." How does each section appear to support the main idea? Choose one section of the text for close reading, focusing on whatever discourse markers are present. Show how they signal meaning and organization. Paraphrase the main idea of the paragraph in 10 words or less. Demonstrate how to use a thesaurus (print or online) to find synonyms, if desired. Have students volunteer to put their paraphrases on the board for teacher and peer editing. <table border="1"> <tr> <td rowspan="3">Language Features</td><td>Discourse Features</td></tr> <tr> <td> thesis statement (versus "topic") outline structure discourse markers in the chosen section </td></tr> <tr> <td>Academic Language Functions</td></tr> <tr> <td></td><td> paraphrasing using a thesaurus to find synonyms </td></tr> </table>	Language Features	Discourse Features	thesis statement (versus "topic") outline structure discourse markers in the chosen section	Academic Language Functions		paraphrasing using a thesaurus to find synonyms
Language Features	Discourse Features						
	thesis statement (versus "topic") outline structure discourse markers in the chosen section						
	Academic Language Functions						
	paraphrasing using a thesaurus to find synonyms						

Student Learning Tasks

Examine the introduction to the article, and find the thesis statement.

Listen to the lesson.

Paraphrase the main idea of the paragraph in 10 words or less. Volunteer to put your paraphrases on the board for teacher and peer editing.

Teacher Notes and References**Handout 2-29:**

"Overhead—Environmental Implications of the Automobile"

Thesaurus, if desired



In a longer piece of writing, the central idea or thesis may not be stated in the first paragraph, but should appear somewhere in the first section. The first several paragraphs may set the background for the topic.

Paraphrasing is very difficult, so a coaching approach works well here.

Use a mini-lesson, if necessary. Be sure that the paraphrase does not retain the original structure or wording. It must be different. Point out that paraphrasing is one of the components of effective use of outside sources.

Outcomes

SLO 1.5 Examine and interpret various visual media...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 4.3 Use clear and respectful language...

SLO 4.6 Respond to and critique a variety of individual perspectives...

SLO 6.1.2 Use organizational planning...

SLO 6.1.4 Use functional planning...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.2.2 Use repetition to imitate a language model...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.2.13 Use recombination...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Brainstorm ways of reducing the impact of the automobile on the environment.

Reading/Speaking: Present the chart to the class. With a partner or a group, students predict the short-term and long-term implications for the environment and society for each of the solutions. Discuss as a group which solutions are the most feasible. Are there other solutions that have not been mentioned?

Writing Task

Have students write a short description of the role of the automobile in their countries, predicting the possible short-term and long-term effects of the automobile on their cultures and the environment. They should include several new words from this lesson (underline new words).

Language Features

Vocabulary

short term, long term, implications, feasible

Structures

Modals: conditional and hypothetical conditional
future time structures

Discourse Features

classification
comparison
cause and effect markers
transition markers

Academic Language Functions

hypothesizing
evaluation

Student Learning Tasks

Brainstorm ways of reducing the impact of the automobile on the environment. (C)

With a partner or a group, predict the short-term and long-term implications for the environment and society for each of the solutions. Discuss as a group which solutions are the most feasible. Are there other solutions that have not been mentioned? (P) (G)

Assignment

Write a short description of the role of the automobile in your country of origin, predicting the possible short-term and long-term effects of the automobile on your culture and the environment. Include several new words from this lesson (underline new words). (P) or (G)

Teacher Notes and References

Handout: A chart from a science textbook or magazine describing ways of reducing the pollution caused by automobiles (teacher-provided)

Assessment: Paragraphs should contain a topic sentence, short- and long-term consequences, effective transition markers, and a conclusion. They should use new vocabulary and grammatical structures appropriately.

Outcomes

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.3.1 Use the structures and language features...

SLO 4.1 Use language to encourage...

SLO 4.2 Communicate effectively to work with others...

SLO 4.4 Manage group action...

SLO 5.1 Identify common themes and symbols...

SLO 6.1.1 Use advanced organization...

SLO 6.1.3 Use directed attention...

SLO 6.1.4 Use functional planning...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.7 Use problem identification...

SLO 6.2.2 Use repetition to imitate a language mode...

SLO 6.2.11 Use transfer...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.2.13 Use recombination...

SLO 6.3.1 Use questioning for clarification...

SLO 6.3.2 Use co-operation...

SLO 6.3.3 Use positive self-talk to reduce anxiety.

Instructional and Learning Sequence

Mathematics: Distribute a chart of automobile fuel economy ratings (current ones will be available online). Have students work in small groups to discuss the meaning and importance of fuel economy ratings, followed by working aloud through questions chosen from **Handout 2-30: "Fuel Economy Questions"** and **Handout 2-31: "Air Pollution Questions."**

Model the math problem-solving strategy and then work in groups to solve. Choose one person at random from each group (AFTER the question is solved) to demonstrate solutions to the class.

OR

Focus the discussion on the removal of contaminants from the exhaust of automobiles and factories, followed by a sample of questions related to reducing exhaust emissions.

Optional: Have students write a word problem on the topic of air pollution, using the information available in the readings. Students evaluate by solving each other's problems.

Language Features

Vocabulary

dissolve, economy, enrichment, exhaust, exponential, fraction, frank, fuel, timing, untreated

From AWL: capacity, contaminants, worthwhile, calculate, globally, emissions, concentration, efficiency, adapted, annual, appropriate, area, attached, co-operatively, communicative, devices, environmental, error, evaluation, focus, grade, integral, involve, links, manipulation, outcomes, percent, periods, precede, previous, released, remove, resources, section, supplement, technology, vehicles

Idiom: tuned up

Discourse Features

format of mathematical problems (e.g., ratios and proportions)

point form (in PowerPoint)

citation format

Student Learning Tasks

Work in small groups to discuss the meaning and importance of fuel economy ratings. Then work through the questions chosen from **Handout 2-30**: "Fuel Economy Questions" and **Handout 2-31**: "Air Pollution Questions," and discuss among your group. (I) (C)

One person from each group demonstrates solutions to the class. (I) (C)

OR

Write a word problem on the topic of air pollution, using the information available in the readings. Evaluate by solving each other's problems. (I) (C)

Teacher Notes and References

Handout 2-30: "Fuel Economy Questions"

Handout 2-31: "Air Pollution Questions"



Some of the solutions are technological answers and some are lifestyle changes.

These questions do not present difficult math concepts, but give language practice for working with numbers, ratios and proportion, fractions, graphing, problem solving, and critical thinking.

Outcomes	Instructional and Learning Sequence
SLO 2.1 Show sufficient control over linguistic structures...	Writing Activity Have students pick a research topic related to air pollution. Students will arrange essential information about the causes and effects of air pollution in a chart for a presentation to follow. The chart should include • the cause and effects of air pollution • chemical compounds involved in the cause or effects of air pollution • reactions and processes involved in air pollution • effects of air pollution on plants, animals, humans, and infrastructure • possible solutions or remedies Require students to prepare computer slides (<i>PowerPoint</i>, et cetera) of the material to accompany a short presentation to the class. Emphasize the need to cite references, and model correct format for various sources.
SLO 2.3.1 Use the structures and language features...	
SLO 2.3.3 Produce effective oral presentations.	
SLO 2.4 Use the steps of the writing process...	
SLO 3.1 Seek, organize, and synthesize information...	
SLO 3.2 Develop and implement a plan for researching...	
SLO 3.3 Quote from or refer to sources...	
GLO 6 Students will know and use effectively metacognitive strategies... (SLOs 6.1.1, 6.1.2, 6.1.5, 6.1.6, 6.1.7, 6.2.1, 6.2.4, 6.2.7, 6.2.8, 6.2.9, 6.2.13, 6.3.1, 6.3.3)	
SLO 1.3 Develop and express a personal position in a variety of ways...	Roundup Have students add to their personal dictionary words that they encounter in more than two or three settings, or words that they think are important for understanding and talking about this topic.
SLO 6.1.6 Use self-monitoring to check...	Vocabulary Review Game: Twenty Questions, using environmental problems Journal: Ask students to respond to the questions: How have cars changed our lives? Could you go back and live in a time before modern transportation? Learning Log: Have students write about one activity in the lesson they felt helped them learn. What strategies did they use to complete the task?

Student Learning Tasks

Assignment

Pick a research topic related to air pollution. Arrange essential information about the causes and effects of air pollution in a chart that you will use in a presentation. The chart should include

- the cause and effects of air pollution
- chemical compounds involved in the cause or effects of air pollution
- reactions and processes involved in air pollution
- effects of air pollution on plants, animals, humans, and infrastructure
- possible solutions or remedies

Prepare computer slides (*PowerPoint*, et cetera) of the material to accompany a short presentation to the class. (I)

Assignment

- a) Add to your personal dictionary words that you encounter in more than two or three settings, or words that you think are important for understanding and talking about this topic.
- b) **Journal Response to the Questions:** How have cars changed our lives? Could you go back and live in a time before modern transportation?
- c) **Learning Log:** Write about one activity in the lesson that you felt helped you learn. What strategies did you use to complete the task?

Teacher Notes and References



By this time, students should have a topic for their research project.

Note the use of point form.



Citation Machine at:

<<http://citationmachine.net>>

Students can use this site to automatically format citations in MLA or APA style.

Handout 2-30: "Fuel Economy Questions"

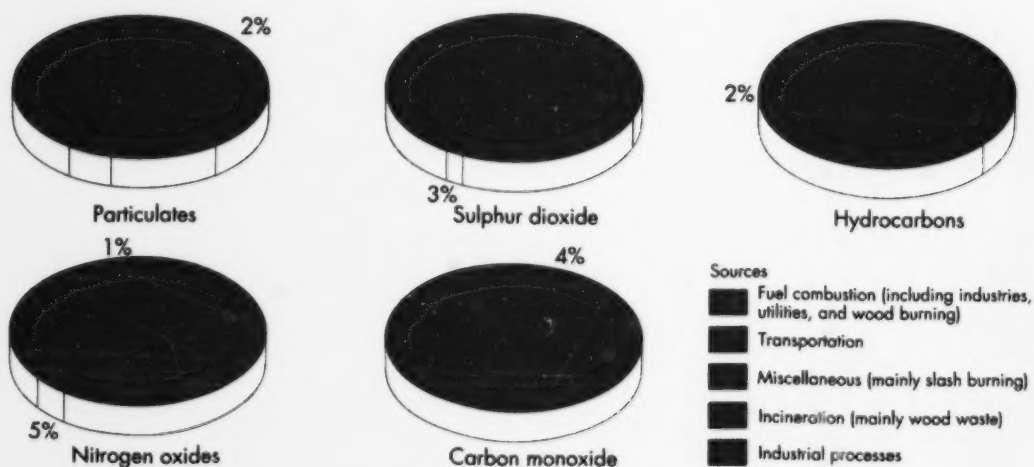
Handout 2-31: "Air Pollution Questions"



Major Air Pollutants

Pollutant	Physical Characteristics	Effect on humans
Sulphur dioxide (SO ₂)	colourless gas with a pungent odour	Irritation of the respiratory tract; may aggravate asthma
Carbon monoxide (CO)	colourless, odourless, tasteless gas	When inhaled, reduces the body's ability to use oxygen; in high quantities, may cause drowsiness or asphyxiation
Nitrogen dioxide (NO ₂)	reddish-brown gas	Irritating; can impair lung function; at high concentrations, makes breathing difficult for people with respiratory problems
Ozone (O ₃)	pungent smelling, colourless gas, formed when sunlight heats other air pollutants	Significantly reduces lung function, even in healthy people
Particulates	microscopic solids or liquids; vary widely in size and chemical composition	Can irritate the eyes and respiratory system; cause coughing and breathing difficulties; associated with cardiac problems; finer particles can cause deep lung damage

Air Pollutants in Canada

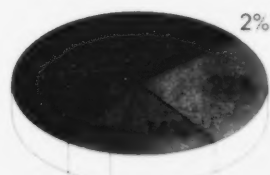




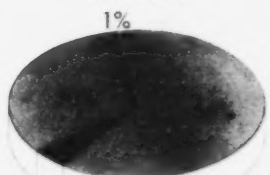
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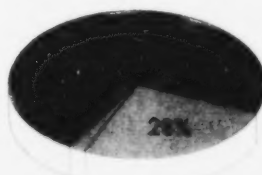
Air Pollutants in Canada



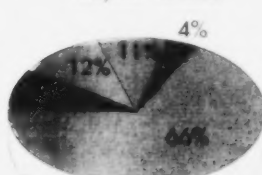
Particulates



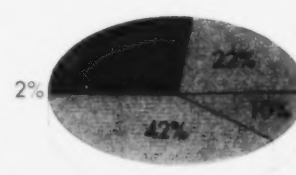
Nitrogen oxides



Sulphur dioxide



Carbon monoxide



Hydrocarbons

Sources

- Fuel combustion (including industries, utilities, and wood burning)
- Transportation
- Miscellaneous (mainly slash burning)
- Incineration (mainly wood waste)
- Industrial processes



Urban Air Pollution

Urban air pollution, also known as smog, has five main components, each of which is harmful to the human respiratory system. Sulphur dioxide (SO_2) is a colourless gas with a pungent odour. It causes irritation of the upper respiratory tract and eyes and may lead to an increase in respiratory diseases. Carbon monoxide (CO) is also a colourless gas, but odourless and tasteless. Low concentrations of CO slow reflexes, while higher concentrations may cause drowsiness and asphyxiation. Nitrous dioxide (NO_2), a reddish-brown gas, also causes an increased risk of respiratory infection and produces constricted air passages in people suffering from asthma. Ozone (O_3), a pungent-smelling, colourless gas, causes coughing and irritation to the lungs and eyes. In addition to the gases, microscopic particles of solids and liquids suspended in the air contain a variety of irritating chemical compounds. These particulates reduce visibility and can damage the lungs and heart.





Projections and Analysis Chart

Environment
CanadaEnvironnement
Canada

Canada


[CAC Home](#) > [National Consensus Forecasts](#) > [Emissions by Sector](#)

NAICC Consensus Forecast - Canada

	Nitrogen Oxide Emissions									
	1990		1995		2000		2005		2010	
	(kt)	%	(kt)	%	(kt)	%	(kt)	%	(kt)	%
Transportation	1253	59	1161	58	1117	54	1088	51	1116	51
Industrial Sources	489	23	481	24	564	27	627	30	685	31
Power Generation	252	12	234	12	266	13	263	12	234	11
Fuel Combustion	65	3	66	3	69	3	71	3	72	3
Incineration/Misc/Ot	47	2	57	3	64	3	72	3	80	4
TOTAL	2106	100%	1999	100%	2080	100%	2121	100%	2187	100%

	Volatile Organic Compound Emissions									
	1990		1995		2000		2005		2010	
	(kt)	%	(kt)	%	(kt)	%	(kt)	%	(kt)	%
Incineration/Misc/Ot	926	33	933	35	971	36	1035	37	1110	38
Industrial Sources	843	30	857	32	878	33	921	33	959	33
Transportation	804	28	647	24	592	22	584	21	604	21
Fuel Combustion	254	9	239	9	238	9	239	9	239	8
Power Generation	2	0	3	0	3	0	3	0	3	0
TOTAL	2829	100%	2679	100%	2682	100%	2782	100%	2915	100%

	Sulphur Dioxide Emissions									
	1990		1995		2000		2005		2010	
	(kt)	%	(kt)	%	(kt)	%	(kt)	%	(kt)	%
Industrial Sources	2425	73	2125	76	2046	73	2042	72	2152	75
Power Generation	690	21	500	18	581	21	628	22	523	18
Transportation	133	4	123	4	116	4	124	4	132	5
Fuel Combustion	50	2	49	2	51	2	51	2	50	2
Incineration/Misc/Ot	7	0	8	0	8	0	9	0	10	0
TOTAL	3305	100%	2805	100%	2802	100%	2854	100%	2867	100%

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Environmental Implications of the Automobile (SOE Fact Sheet No. 93-1)

The automobile has probably done more to shape the character of 20th-century Canada than any other piece of technology. It has given us mobility and independence. It has given us the convenience of going where we want to, when we want to, and of doing so in comfort. It has liberated the average person from the limitations of time and place, opening up new opportunities and offering new experiences. More significantly, it is one of the pivotal elements of our economy. No wonder, then, that Canadians have made the car such a central fixture of their lives.



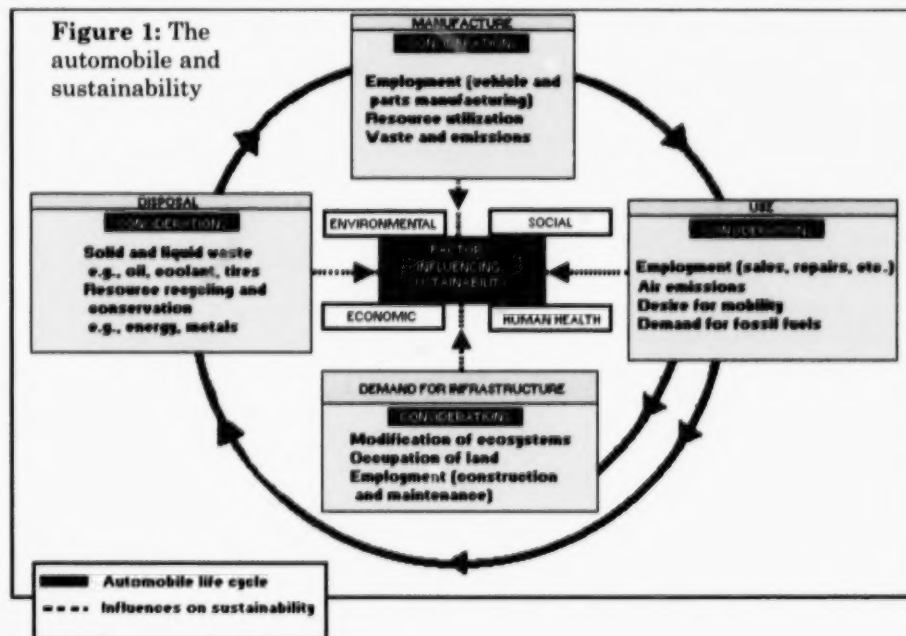
But the automobile also affects the environment in many ways. Cars and their associated infrastructure use resources, consume energy, and emit pollutants on a substantial scale. They are a source of noise and congestion and a leading cause of accidental deaths.

They have also radically reshaped the landscape—directly through the building of expressways, roads, and other infrastructure, and indirectly through effects on settlement patterns.

The automobile's impact has been all the greater because of its success. More than 12 million cars now traverse Canada's roads—one for nearly every two Canadians, one of the highest ratios of car ownership in the world. Each of these cars travels, on average, more than 16,000 km per year, a total of some 200 billion kilometres, or more than 1,000 times the distance between the Earth and the sun.

Because it is so tightly woven into the fabric of Canadian life, the car presents a special kind of environmental dilemma. On the one hand, there is the need to eliminate or reduce the environmental stresses associated with it. On the other, there is the desire to preserve the advantages it has given us. Reconciling these objectives presents a considerable challenge.

As Figure 1 shows, the automobile is part of a complex web of interactions. To determine its place in a sustainable environment, we must examine its impacts and devise solutions that effectively respond to this entire range of interactions.



(continued)



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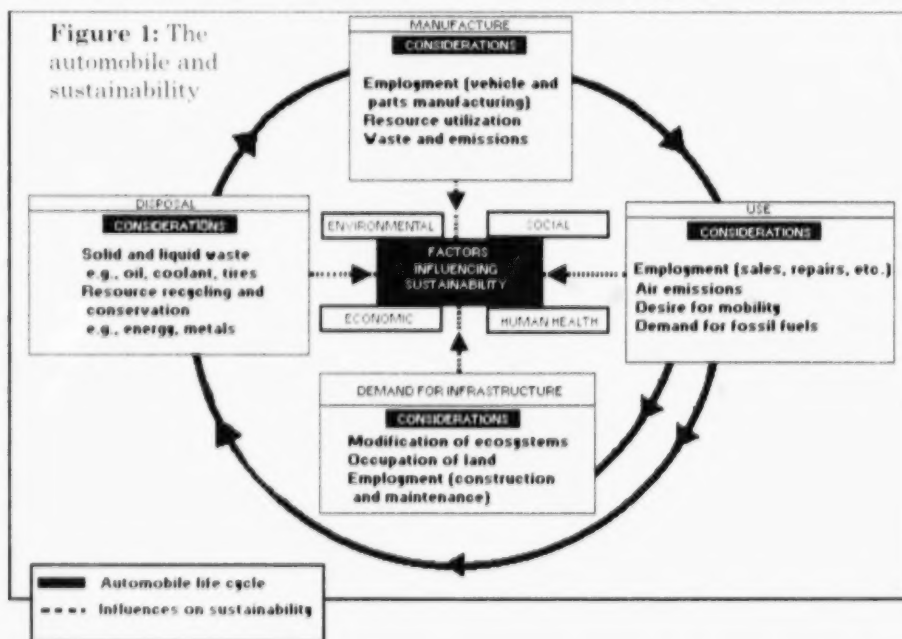
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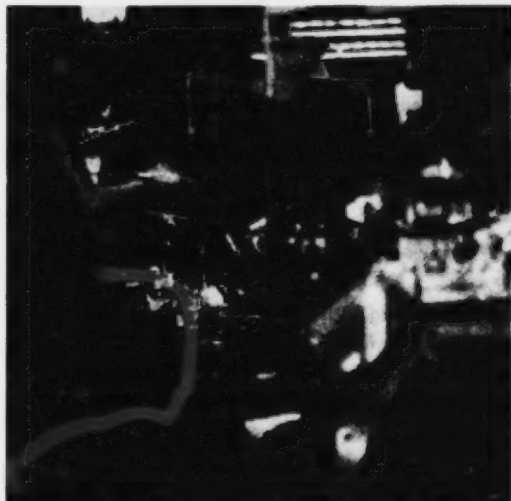


(continued)

Environmental Implications of the Automobile (continued)

The Car and the Economy

In Canada, the demand for automobiles and associated products and services has stimulated activity in virtually every sector of the economy, contributing to a standard of living that is one of the highest in the world.



Industry, Science and Technology Canada

Workers on an automobile parts assembly line

With the economic boom that followed the Second World War, car ownership rose dramatically. More people could afford to live and work in widely separated areas, and low-density suburbs began to spring up at the edges of large cities and nearby towns. For the suburbanites, car ownership was not only a convenience but often a necessity.

More cars and expansive development increased the demand for motor vehicle infrastructure, such as roads, bridges, and parking lots. More service outlets, dealerships, gas stations, auto parts stores, and other car-related services became necessary. Motels, restaurants, and retail businesses along well-travelled routes also began to benefit. Both directly and indirectly, the automobile had become an important influence on Canada's economic activity, employment opportunities, and development patterns.

In general, the fortunes of the motor vehicle industry have been a good indicator of those of the economy as a whole. In good economic times, car

production increases; in bad times, it declines (Fig. 2). And as the automobile industry goes, so go the many other industries, such as mining, manufacturing, and retail sales, that depend on it. In 1988, for example, the motor vehicle manufacturing industry used more than \$30 billion worth of materials, indirectly stimulating demand in sectors such as energy and mineral resources (Statistics Canada, 1988a).

Between 1986 and 1990, about 1.9 million motor vehicles and \$35 billion worth of motor vehicles and parts were produced each year (ISTC, 1991). The value of these goods was equal to over 6% of Canada's Gross Domestic Product and accounted for more than a quarter of the nation's exports (Statistics Canada, 1990b, 1990f). In 1990, 572,000 people—roughly one out of every 20 working Canadians—were employed in jobs directly linked to motor vehicles. They earned approximately \$16 billion in gross wages (Statistics Canada, 1990e).

Retail sales of motor vehicles, parts, and associated services make up the largest proportion of Canadian retail activity—35% in 1988 (Statistics Canada, 1988b). Hotel, restaurant, and other retail businesses associated with domestic automobile travel amounted to \$9.1 billion, or 64% of domestic travel spending, in 1990 (Statistics Canada, 1990c).

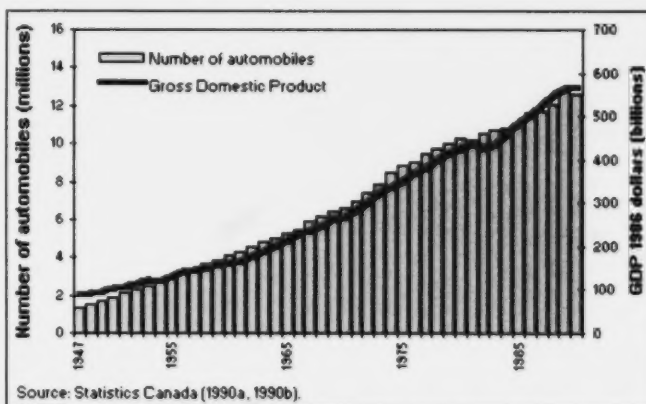


Figure 2: The relationship between number of automobiles and Gross Domestic Product

(continued)

Environmental Implications of the Automobile (continued)

The Car and the Environment

Most Canadians are aware of the high-profile environmental concerns associated with automobiles, such as the consumption of fossil fuels and the subsequent air pollution that accompanies their use. While these are legitimate concerns, a number of less obvious but equally significant environmental stresses occur during the car's life cycle. These impacts are related not only to its use but also to its manufacture, demand for infrastructure, and disposal. Understanding the full spectrum of these impacts is an important first step towards minimizing the negative environmental effects of the car.

Motor Vehicle Manufacture

The transformation of raw resources and energy into motor vehicles gives rise to a variety of environmental consequences. The most important of these are the depletion of nonrenewable resources (including metals and energy) and the environmental stresses associated with the production and use of these resources.

Use of nonrenewable materials. In 1989, the average motor vehicle weighed 1,428 kg, 77% of which was metal (Table 1). It can therefore be estimated that more than 2 billion kilograms of metal could be used in the manufacture of the 1.9 million motor vehicles produced each year in Canada. While much of this metal is recovered or recycled when the vehicle is taken out of service, it is neither cost-effective nor technologically possible to recover all of the metal used in motor vehicle manufacture. Furthermore, because the number of vehicles being produced is growing, more metal is needed for the manufacture of new vehicles than can be obtained from old ones. Consequently, some depletion of nonrenewable resources is inevitable.

In addition, the extraction, smelting, and refining of these metals can give rise to a number of other concerns, such as land disturbances, leaching of metals from mine tailings, acid mine and saline drainage, runoff of milling effluent containing toxic reagents used to extract minerals from the ore, and release of nitrogen oxides (NO_x), volatile organic compounds (VOCs), sulphur dioxide (SO₂), carbon dioxide (CO₂), carbon monoxide (CO), particulates, and other pollutants (Government of Canada, 1991).

Material	Weight (kg)
Plain carbon steel	643.6
High-strength steel	106.4
Stainless steel	14.1
Other steel	21.4
Iron	208.6
Plastics/composites	102.0
Fluids/lubricants	81.6
Rubber	61.1
Aluminum	70.7
Glass	38.6
Copper	22.5
Zinc	9.1
Other materials	47.5
Total	1 427.7
Includes cars, vans, and station wagons.	
Source: Government of Canada (1991)	

Table 1: Weights and types of materials utilized in the construction of an average motor vehicle, 1989

Consumption of energy. As much as 20% of all the energy consumed throughout the life of a vehicle goes into its manufacture (Matsumoto, 1984). It has been estimated that between 66 and 105 gigajoules of energy are needed to produce a motor vehicle, depending on the proportion of recycled materials used. This is equivalent to the energy contained in between 2000 and 3100 L of gasoline, or the amount of fuel consumed by 16,000 to 26,000 km of driving. Production of the 1.9 million motor vehicles made in Canada in 1989 would thus have consumed between 1.8% and 2.9% of Canada's end-use energy demand, or the energy used by the final consumer (Tien et al., 1975; Government of Canada, 1991).

The environmental stresses that may result from using this energy depend on its source. Fossil fuels, for example, emit SO₂, CO₂, NO_x, CO, and particulates, while nuclear power plants generate toxic radioactive wastes, which are often difficult to dispose of. Hydroelectric energy may cause ecological disruption through flooding. Regardless of origin, electric power requires the construction and maintenance of transmission lines and associated rights-of-way.

Infrastructure and Land Use

The infrastructure required by the increasing numbers of vehicles on Canada's roads today can be linked to a variety of environmental effects, including the occupation of productive land and the alteration of ecosystems.

(continued)

Environmental Implications of the Automobile (continued)

Overall, there are about 879,000 km of highways in Canada (Statistics Canada, 1991). In urban areas, up to 42% of the land in downtown cores and 18% of the land in greater metropolitan areas may be occupied by motor vehicle infrastructure, including roads, rights-of-way, bridges, garages, retail outlets, and parking lots (Simpson-Lewis et al., 1979). In Toronto, 2% of the city's area is devoted specifically to parking (Macpherson, 1988).

Much of this land was once prime agricultural land. Urban development patterns, while beginning to change, are still often characterized by the demand for low population density suburbs and are based on the assumption that cars will be the primary mode of transportation. As most of Canada's largest urban centres—the Windsor-Quebec City corridor, for example, or British Columbia's Lower Fraser Valley—have typically developed in productive agricultural areas, motor vehicle infrastructure usually consumes some of the country's best farmland. The most recent data available show that, between 1981 and 1986, 55,200 ha of rural land near 70 Canadian cities was urbanized. Of this, 59% was prime agricultural land (Government of Canada, 1991).

Roads and supporting services for vehicles affect the environment in numerous other ways as well. Road salt, leaked motor oil, and particulate emissions, for example, wash off road surfaces and concentrate in ditches and storm sewers. The extent of the contamination of water and land by these routes has not yet been determined. In addition, highway construction may alter traditional drainage patterns, and soil erosion and landslides may occur more frequently around roads and bridges. Roads may also divide otherwise undisturbed lands, interfering with the movements of wildlife and altering habitats.

The Demand for Fossil Fuels

In 1990, transportation accounted for 29% of Canada's end-use energy demand. Retail sales of gasoline for motor vehicles accounted for 54% of this, or 16% of end-use energy demand (Statistics Canada, 1990d). Although fuel consumption per vehicle has declined in recent years, a number of concerns remain. These include dependence on a nonrenewable energy source, the environmental damage that accompanies the exploration, extraction, refining, storage, delivery, and disposal of fossil fuels, and the pollution produced by combustion.

Consumption of energy resources. In 1988, the average personal-use passenger car was driven 6% farther but consumed 22% less fuel than its 1980 counterpart. The average fuel consumption of all in-use automobiles decreased from 16.5 to 12.0 L/100 km between 1980 and 1988 (Statistics Canada, 1991). For new cars, the average consumption decreased from 10.2 to 8.1 L/100 km over the same period (Transport Canada, 1991). Reduced engine size and vehicle weight have both contributed to improved fuel efficiency.

Energy production and delivery. About 35% of the crude oil that enters Canadian refineries is turned into motor gasoline. The processing and handling of these substances can result in such environmentally damaging events as oil and gas spills. Between 1985 and 1990, an average of 7.9 million litres of motor gasoline and 16.2 million litres of crude oil per year were reported to have been spilled in Canada during extraction, transportation, refining, storage, and delivery (NATES, 1992). It is suspected that unreported events, such as the dumping of contaminated ballast from tankers and runoff from roads and sewers, may release even greater amounts (OECD, 1991). Furthermore, leaking gasoline from underground storage tanks has recently begun to emerge as a significant contributor to the contamination of soil and water. A single litre of gasoline can make up to 1 million litres of water unfit for human consumption (Kruss et al., 1991).

In 1987, crude oil refineries collectively discharged, on a daily basis, 1,080 kg of oil and grease, 4,039 kg of suspended solids, 77 kg of phenols, 21 kg of sulphide, and 726 kg of ammonia nitrogen. However, a general downward trend in refinery discharges has been apparent. Between 1972 and 1987, discharges of oil and grease were reduced by 87%, suspended solids by 81%, phenols by 96%, sulphides by 99.5%, and ammonia nitrogen by 93%. In 1987, refineries were, on average, in compliance with monthly emission standards 94% of the time and with daily standards more than 99% of the time (Losier, 1990).

VOCs, which contribute to the formation of ground-level ozone, are commonly released into the air when gasoline is transferred between facilities and vehicles are refuelled. In 1985, these processes contributed an estimated 6% of the human-released VOCs in Canada (Government of Canada, 1991).

(continued)

Environmental Implications of the Automobile (continued)

Fossil fuel combustion. Emissions from fossil fuel combustion can lead to a number of environmental and human health problems (Table 2). In the past 20 years, factors such as improved fuel efficiency, the increased use of emission control devices, and stricter new car emission control standards have contributed to a decline in per-vehicle emissions of some common pollutants. A new car today emits only 24% of the NO_x, 4% of the VOCs, and 4% of the CO of a new car in the early 1970s (Motor Vehicle Manufacturers' Association 1991). Between 1985 and 1990, total emissions of NO_x from automobiles decreased from 352,000 to 248,283 t, VOC emissions

decreased from 412,700 to 340,838 t, and CO emissions decreased from 4.0 to 2.7 million tonnes (Kosteltz and Deslauriers, 1990; Environment Canada, Pollution Data Analysis Division, unpublished data).

Reduced automobile emissions may be contributing to improved urban air quality in some Canadian cities. For example, in Vancouver, Calgary, Toronto, Ottawa, Montreal, and Quebec City, where cars are a major influence on air quality, indicators such as ambient NO₂ and CO decreased by an average of 8.6% and 33%, respectively, between 1980 and 1990 (T. Furmanczyk, personal communication).

Emission	Health impacts	Environmental impacts
Nitrogen oxides (NO_x) include nitric oxide (NO) and nitrogen dioxide (NO ₂), which is formed from the oxidation of NO.	• NO₂ is a lung irritant at high concentrations. • NO₂ may lead to depression of the immune system, with children and the elderly being at risk.	• NO₂ reacts with water to form nitrate (NO₃⁻) a source of acid rain. • NO₂ contributes to the formation of ground-level ozone. • NO₂ is associated with suppressed vegetation growth. • NO₂ contributes to the corrosion of metals and degradation of textiles, rubber, and polyurethane.
Carbon monoxide (CO) is a gas produced through the incomplete combustion of organic materials.	• CO reduces the ability of the blood to carry oxygen, with smokers, persons with heart disease, and those with anemia being especially sensitive.	• CO may contribute to the formation of ground-level ozone by depleting the atmosphere's supply of hydroxyl radical (OH[•]).
Carbon dioxide (CO₂) is released by the combustion or decay of organic material.		• CO₂ is an important greenhouse gas, contributing to global warming.
Volatile organic compounds (VOCs) are a chemically diverse group of compounds that have at least one carbon atom and are highly volatile.	• Many individual VOCs (e.g., benzene) are known to have or are suspected of having human health effects ranging from carcinogenicity to neurotoxicity.	• VOCs contribute to the formation of ground-level ozone.
Ozone (O₃) is formed from the reaction of NO _x , VOCs, and sunlight.	• Exposure to O₃ is associated with changes in lung function, decreased immune function, and possibly the development of chronic lung disease.	• O₃ reduces agricultural productivity and the growth rate of trees. • Ground-level ozone is a global warming agent.

Source: Modified from Healthy City Office (1991)

Table 2: Major impacts of common pollutants associated with automobile use on human health and the environment

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Environmental Implications of the Automobile (continued)

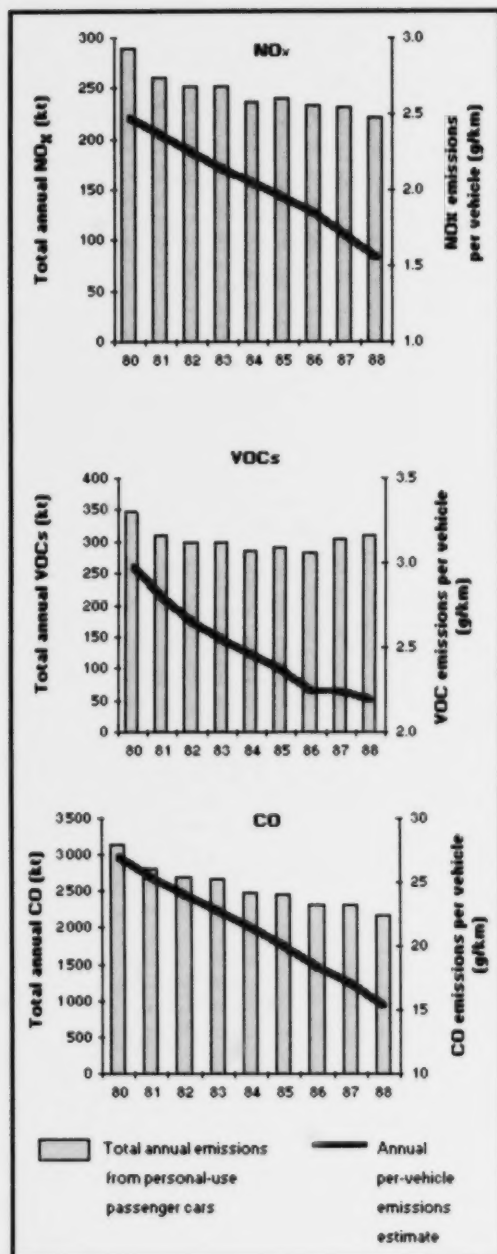


Figure 3: Total annual and per-vehicle emissions of NO_x, VOCs, and CO from personal-use passenger cars, 1980–88

In spite of these improvements, the automobile remains a major source of some pollutants. A 1985 survey of national air emissions showed that

gasoline-powered cars contributed 18.7% of total NO_x emissions, 22.9% of total VOC emissions, and 37.1% of total CO emissions (Kosteltz and Deslauriers, 1990). Although emissions of these pollutants from the average personal-use passenger car decreased between 1980 and 1988, the total number of kilometres driven increased. As a result, the reduction in overall emissions was less dramatic than might have been expected (Fig. 3).

The occurrence of ground-level ozone, a product of the interaction of NO_x, VOCs, and sunlight, should also be decreasing. However, because of the increased number of vehicles on the road, emissions of NO_x and VOCs still lead to concerns about ground-level ozone, especially in urban centres where automobile use is concentrated. The Lower Fraser Valley, the Windsor–Quebec City corridor, and the Southern Atlantic Region have been identified as problem areas, as they exceed Canada's maximum acceptable ground-level ozone objectives most frequently (Hilborn and Still, 1990).

Canadian emissions of CO₂, which contribute to increasing CO₂ levels internationally and concerns of global warming, have decreased on a per-vehicle basis in recent years as average fuel efficiencies have improved. Nevertheless, between 1987 and 1990, total CO₂ emissions from automobiles rose slightly, from 48.4 to 49.0 million tonnes, as a result of the increase in vehicle numbers and use. In 1990, automobiles continued to be among the most important sources of CO₂ in Canada, accounting for almost 11% of our total emissions (Jaques, 1992).

Disposal. Large amounts of waste motor oil, containing a diversity of contaminants ranging from PCBs to metals, enter the environment because of improper disposal. Of the estimated 230 million litres of waste motor oil generated by motor vehicles in 1990, approximately 50% was rerefined and 34% was used as fuel to power incinerators and furnaces. The remaining 16%—over 36 million litres—is believed to have been disposed of in ways that allow environmental contamination, including dumping in landfills and sewers and use as a dust suppressant (Environment Canada, Office of Waste Management, unpublished data).

(continued)

Environmental Implications of the Automobile (continued)

Driving and Maintenance Habits

Technical improvements in fuel efficiency and emission controls can be offset by the driving and maintenance habits of automobile owners. A Vancouver study, for example, showed that passenger cars made up 98.4% of downtown rush-hour traffic but carried only 62.6% of the commuters (B.C. Transit, 1990)—an inefficient use of transportation energy when compared with the use of public transit vehicles (Table 3). In addition, traffic congestion reduces fuel efficiency and increases pollution, as engines not running at maximum efficiency tend to consume more fuel and release proportionately more emissions. It has been estimated that a 16-km trip taken in light traffic and requiring 11 minutes would produce 2 g of VOCs; the same trip in heavy traffic and requiring 30 minutes would generate 7 g—a 250% increase (Go Green, 1990).

Transportation mode	Fuel or electricity use (L/100 km)	Number of commuters	Energy use (MJ/person-km)
Automobile	15	1	4.74
		6	0.79
	10	1	3.16
		4	0.79
	7	1	2.21
Van		4	0.55
	20	15	0.42
	10	7	0.45
Diesel bus	56	40	0.52
Subway	2.61 kwh/km	75 (per car)	0.13
GO Rail	761	810	0.35

MJ = megajoule

Source: Modified from Healthy City Office (1991).

Table 3: A comparison of energy use by transportation mode

Car maintenance also influences fuel efficiency and emissions. New vehicle emission standards for NO_x, VOCs, and CO assume a properly maintained vehicle. Unfortunately, many vehicles do not receive regular maintenance or may no longer have functioning emission control devices. Inadequate maintenance may result in emission levels 2–10 times higher, per car, than might be expected (B.C. Ministry of Solicitor General, 1991). As a result, a relatively small number of vehicles may account for an unusually large proportion of emissions. One recent study suggested that nearly 50% of total emissions may be produced by only about 10% of all vehicles—mostly those that are older and poorly maintained (Ontario Round Table on Environment and Economy,

1991). Vehicle emissions may often be lowered by simple repairs, such as replacing the air filter or spark plugs, resetting the engine timing, or adjusting the carburetor, measures that may also increase fuel efficiency and improve driving performance.

Automobile Air Conditioners

Approximately 60% of the cars and light-duty trucks sold in Canada are equipped with air conditioners that contain chlorofluorocarbons, or CFCs, which contribute to stratospheric ozone depletion and global warming. Even well-maintained motor vehicle air conditioners leak CFCs during their normal functioning, and additional CFCs are usually released when air conditioners are serviced. Furthermore, old air conditioners release whatever CFCs they still contain when crushed at auto wreckers. In 1991, motor vehicles accounted for 23% of Canada's CFC consumption (Environment Canada, Commercial Chemicals Branch, unpublished data).

Disposal

Once automobiles, or any of their components, wear out, the issue of their disposal must be contended with. A great deal of material goes into the manufacture of a car, making discarded vehicles and components a significant source of metals, plastics, and rubber. Although some materials in scrapped cars are recycled, the disposal of others presents problems.

The disposal of tires illustrates the challenge. An estimated 19.5 million vehicle tires are discarded every year in Canada, about 13 million of which come from passenger vehicles (CCME, 1990). However, no process exists for converting old tires into materials suitable for manufacturing new tires, in the way that new metal products, for example, can be made from old.

At present, 62% of discarded tires are landfilled, 18% are recycled or retreaded, 6% are burned in an environmentally acceptable manner as a fuel source, and the remaining 14% are stockpiled (CCME, 1990). Although landfilling may not be a desirable method of disposal, stockpiling presents risks such as fires, the emissions from which contaminate adjacent air, land, and water. Such an event occurred in 1990, when 11.5 million discarded tires caught fire at a stockpile site near Hagersville, Ontario.

(continued)

Environmental Implications of the Automobile (continued)

New technologies may lead to uses for discarded tires and change their status from waste to resource. Researchers are now exploring the incorporation of rubber from waste tires into plastics and asphalt. However, considerably more research will be needed before such uses will be accepted as operationally, economically, and environmentally feasible.



Meeting the Challenge

A number of initiatives in Canada are aimed at addressing the multitude of environmental challenges presented by the automobile. Collectively, and in the long term, these actions will help to reduce the amount of environmental stress associated with automobiles.

Manufacturing

Manufacturing is a much cleaner process than it was a few decades ago, but many improvements can still be made through improved operating procedures, use of lower-risk materials, new technologies, emission controls, waste minimization, and energy conservation. The Canadian Motor Vehicle Manufacturers' Association, in co-operation with the Ontario and federal governments, now has a major program—the Automotive Pollution Prevention Program—to develop and implement strategies for pollution reduction in the industry. As a component of the Great Lakes Pollution Prevention Initiative, the program's first activities will focus on reducing the use and release of toxic substances in manufacturing.

Recycling

About 75% of the materials in scrap vehicles can be recycled (Siuru, 1991). In fact, automobile recycling already contributes significantly to national production levels of some materials. The salvage of platinum from old catalytic converters, for instance, accounts for one-third of domestic platinum production. In addition to extending the life span of nonrenewable resources, metal recycling requires 50–74% less energy for production and releases 86% less air pollutants, 76% less water contaminants, and 97% less solid waste than metal production from ores (Government of Canada, 1991).

Most metallic components, such as engine blocks, starting motors, and generators, can be and are reused or recycled, but nonmetallic items, such as plastics, fluids, and rubber, are more difficult to contend with. Car manufacturers are now intensifying their research on recycling, and especially on ways of dealing with nonmetallic components. In North America, one of the most recent initiatives has been the formation of the Vehicle Recycling Partnership to coordinate the research activities of the major automobile manufacturers and to establish recycling guidelines.

An important concept that has been receiving increasing attention is "design for recycling." The idea is that recyclability should be designed into the car from the beginning by selecting materials that can be recycled and by making the car easier to dismantle. Many manufacturers, for example, now label plastic components with standard codes to make it easier to sort them by chemical composition when they are recycled.

To encourage the recycling of certain other components, some provinces place a fee on their purchase. A few, for example, charge tire fees, with the objective of funding research into environmentally acceptable methods of disposal. In British Columbia, a similar system has been set up to facilitate the collection and recycling of lead-acid batteries, thus preventing them from being landfilled or burned. Such fees can help to reduce the landfilling of waste, particularly toxic items such as batteries.

(continued)

Environmental Implications of the Automobile (continued)

Inspection and Maintenance Programs

Inspection and maintenance programs are aimed at reducing in-use vehicle emissions and are designed to detect vehicles with excessive emission levels. The Greater Vancouver Regional District's program, possibly the most comprehensive in North America, consists of an annual visual inspection of emission control devices and the measurement of tailpipe emissions. Owners are charged a fee for the inspection, and those whose vehicles do not meet the standards are required to restore them to proper operating condition before being issued registration or re-registration documents. Inspection and maintenance programs are in place or being planned for other regions of Canada.

Employer-Sponsored Initiatives

Some employers have taken steps to reduce the dependence of their employees on automobiles. These include flexible schedules that allow employees to commute during off-peak times or to work longer hours per day but fewer days per week; telecommuting, or communicating with work by phone, fax, or computer, which allows some employees to work out of their homes on a full- or a part-time basis; subsidized parking for employees who carpool, to encourage groups of employees to coordinate their commuting; and satellite offices that enable some employees to work closer to home and reduce commuting distances.

Alternative Transportation Modes

Transportation mode	NO _x	VOCs	CO
Light rail	43.0	0.2	2.0
Transit bus	95.0	12.0	189.0
Van pool	24.0	22.0	150.0
Car pool	43.0	43.0	311.0
Single-occupant car	128.0	130.0	934.0

Source: Modified from Lowe (1990).

Table 4: A comparison of emissions by transportation mode (g/person-100 km)

In areas of high population density, a shift to alternative transit modes can be encouraged by controlling access by cars, improving public transit systems, improving interfaces between cars and public transit (for example, park and ride), and creating and improving facilities for walking and cycling. In low-density suburban developments,

where public transit is less practical, car- or van-commuting schemes may be more efficient (Reid, 1986). As well as using less energy, alternative modes of transit produce lower emission levels per passenger (Table 4).

Reduction to Accidentally Released VOCs

The Canadian petroleum industry has installed equipment in the Vancouver and Toronto areas to recover releases of VOCs that occur during the transfer of gasoline between facilities (CPPI, 1991a). In addition, refineries decreased the amount of butane added to summer gasolines in Canada in 1991 to reduce their volatility and thus minimize VOC releases during refuelling and transfer (CPPI, 1991b).

CFC Replacement in Air Conditioners

As part of Canada's commitment to phase out CFCs, automobile manufacturers will replace CFC-12 in air conditioners with hydrofluorocarbons (HFCs) and hydrochlorofluorocarbons (HCFCs) by the year 2000. HCFCs have considerably less stratospheric ozone-depleting potential than CFCs, while HFCs have virtually no capacity to deplete stratospheric ozone. Both groups of compounds appear to have significantly less impact on global warming than CFC-12. Some automobile manufacturers will voluntarily begin to use HFCs and HCFCs as soon as 1993 but will continue to service vehicles containing CFC-12 until the end of the century. Some also plan to install recycling equipment in authorized service centres to reduce CFC-12 losses during servicing.

New Emission Standards

Automobile manufacturers have voluntarily agreed to introduce, in Canada, vehicles that meet the stringent exhaust emission standards being progressively introduced in the United States beginning in 1994. These vehicles will emit 60% less NO_x and 29% less VOCs than are currently allowed. The government is developing comprehensive emission control regulations to be effective in the 1996 time frame.

Alternative Fuels

Currently available alternatives to gasoline include propane, natural gas, methanol, ethanol, and oxygenated gasolines (varying mixtures of gasoline and alcohol) such as M85, which is 85% methanol and 15% gasoline. These fuels burn more efficiently than gasoline and thus emit fewer pollutants.

(continued)

Environmental Implications of the Automobile (continued)

Furthermore, ethanol and methanol can be produced from biomass and are therefore renewable. Domestic automobile manufacturers have recently begun to introduce flexible-fuel vehicles that can run on conventional fuel as well as M85 or ethanol.

Electric vehicles or those powered by hydrogen cells may provide a renewable and even cleaner generation of alternatives to gasoline. In fact, with the development of more efficient batteries, some car makers are now preparing to introduce electric cars to the market. Hydrogen fuels are still in the experimental stages and will require additional research before becoming available to consumers.

The Car and a Sustainable Environment

How can we ensure that the automobile is compatible with a sustainable environment? Certainly there is no simple answer. Cars are likely to be a permanent fixture of industrialized and semi-industrialized societies for some time to come.

Nor can we rely exclusively on technology to put the issue to rest. Technological improvements over the last 20 years have already done much to reduce the environmental impact of the individual car, and further improvements can be expected in coming years. But much of the ground gained through technological improvements is being lost as more and more cars crowd the roads. To offset the effect of growing numbers, we shall have to look to other solutions—urban planning initiatives, economic strategies, and education—to lessen our dependence on the automobile. Eventually, these solutions could give us a more varied choice of transportation options in which the car plays a more efficient role.

Whatever the solutions we choose, they must work within an international as well as a national context. Nothing is accomplished if some of the problems, such as those associated with manufacture or disposal, are simply transferred from one country to another, thus solving problems at home but passing on challenges to global neighbours.

With continuing population growth and rising standards of living, the demand for car ownership will continue to increase. Because of that, we are unlikely to find an ultimate solution to the environmental problems associated with the automobile. Instead, we shall always have to confront the task of balancing the demand for cars with our need for a sustainable environment. That means that the issue must constantly be readdressed, with new solutions devised and old solutions reworked as conditions change.

Above all, we have to recognize the complexity of the many issues surrounding the car and look for solutions on a multitude of fronts—technological, social, economic, political, and ecological. Such a holistic approach is our best chance for preserving the benefits of the car while keeping its environmental effects within the limits of sustainability.

1. In this fact sheet, the term "automobiles" is used synonymously with "passenger cars," a group that includes both personal-use passenger cars and fleet vehicles. In contrast, "motor vehicles" is defined to include both passenger cars and light-duty trucks and vans.

Overhead—Environmental Implications of the Automobile

Environmental Implications of the Automobile (SOE Fact Sheet No. 93-1)

Outline**Introduction****The Car and the Economy****The Car and the Environment****Motor Vehicle Manufacture**

Use of non-renewable materials

Consumption of energy

Infrastructure and Land Use**The Demand for Fossil Fuels**

Consumption of energy resources

Energy production and delivery

Fossil fuel combustion

Disposal

Driving and Maintenance Habits**Automobile Air Conditioners****Disposal****Meeting the Challenge****Manufacturing****Recycling****Inspection and Maintenance Programs****Employee-Sponsored Initiatives****Alternative Transportation Modes****Reduction of Accidentally Released VOCs****CCF Replacement in Air Conditioners****New Emission Standards****Alternative Fuels****The Car and a Sustainable Environment**

These graphics, figures, and charts accompany the article.

Graphic: Highway in an urban area at night

Figure 1: The automobile and sustainability

Graphic: Workers on an assembly line

Figure 2: The relationship between number of automobiles and Gross Domestic Product

Table 1: Weights and types of materials utilized in the construction of an average motor vehicle, 1989

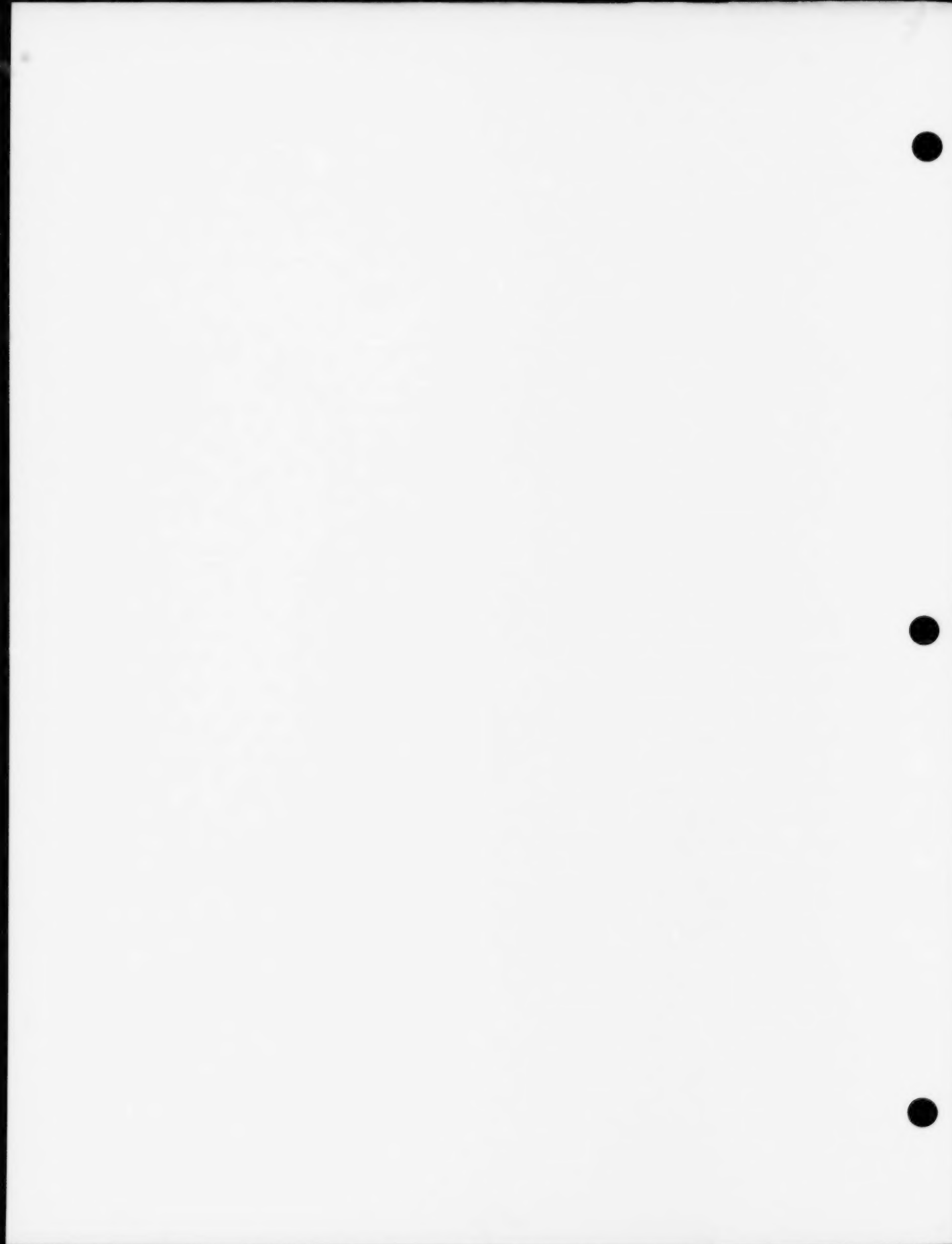
Table 2: Major impacts of common pollutants associated with automobile use on human health and the environment

Figure 3: Total annual and per-vehicle emissions of NOx, VOCs, and CO from personal-use passenger cars, 1980-88

Table 3: A comparison of energy use by transportation mode

Graphic: Burning tires at Hagersville (a town)

Table 4: A comparison of emissions by transportation mode (q/person-100 km)



Fuel Economy Questions

In Canada, a car or truck's fuel economy is measured in litres per 100 kilometres (L/100 km). For example, a car's fuel economy rating may be 8.7 L/100 km. This means that, on average, the car burns 8.7 litres of fuel to travel 100 kilometres. By doing the following problems you will gain a better understanding of fuel economy.

- Rank the following fuel economy ratings from best (most fuel efficient) to worst (least fuel efficient). Use the numbers from 1 to 5 to rank them—1 is the best, 5 is the worst.

Your ranking (best to worst):

12.6 L/100 km _____

6.2 L/100 km _____

9.5 L/100 km _____

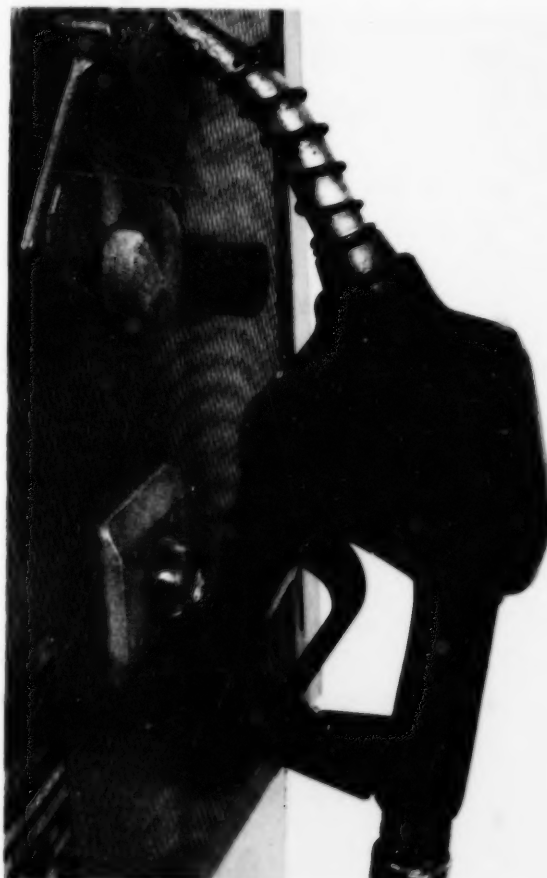
7.3 L/100 km _____

10.7 L/100 km _____

- A car has a fuel economy rating of 9.3 L/100 km.
 - How many litres of gasoline will be needed to travel:
 - 325 km?
 - 750 km?
 - How many kilometres can this car travel on:
 - 45.7 L of fuel?
 - 65.2 L of fuel?
 - The capacity of the fuel tank is 58.5 L. What is the cruising range of the car?
- Find, correct to one decimal place, the fuel economy of:
 - a car that travels 450 km on 52.5 L of fuel.
 - a van that travels 415 km on 65.0 L of fuel.
 - a transport truck that travels 6000 km on 1482 L of fuel.

- Two families drive to Florida for the March break. One family drives a car whose fuel economy rating is 7.3 L/100 km, and the other drives a car that is rated at 10.5 L/100 km. Each family travelled 5,200 km and the average cost for fuel was 45.7¢ per litre. Calculate the amount of fuel that each family used for the trip and also the cost for fuel for each family.
- Suppose that you or your family drives a car whose fuel economy is 10.6 L/100 km. By having the engine tuned up you can improve the fuel economy to 8.9 L/100 km but the tune-up will cost \$125. You drive an average of 20,000 km per year and fuel costs 58.9¢ per litre. Calculate the savings or the costs that will result over the next year by having the engine tuned up now.

(continued)



Fuel Economy Questions (continued)

6. Repeated tests show that the fuel economy of a car is 7.5 L/100 km for highway driving and 12.7 L/100 km for city driving. This car is to be taken on a vacation trip of 8,000 km that is 70% highway driving and the rest is city driving.
 - (a) Calculate, correct to one decimal place, the expected overall fuel economy on this trip.
 - (b) Use your answer to part (a) to compute the expected cost for fuel on this trip if the average cost per litre of fuel is 60.3¢.

7. Let's suppose that, on average, cars operate with a fuel efficiency of 9.3 L/100 km. Let's also suppose that we could increase the fuel efficiency of every vehicle to 7.3 L/100 km.
 - (a) How many litres of fuel would be saved each year by a person who drives 20,000 km per year?
 - (b) If there were 250,000 vehicles in a city, and each of them could burn that much less fuel, how many litres of fuel would be saved?
 - (c) If the cost of fuel is 59.5¢ per litre, how much money would be saved?

- (d) Think of some worthwhile community projects that could be financed with this saved money.
- (e) There are over 12,000,000 vehicles in Canada. Perform calculations for Canada similar to those you did for the city in parts (b) and (c). Then suggest several worthwhile national projects that could be financed with the saved money.

8. Clearly there are financial advantages for the consumer to increasing the fuel efficiency of his or her car. Now try to think more globally (for example, think about society or the physical environment).
 - (a) What are some other advantages to increasing the fuel economy of vehicles?
 - (b) Suggest some ways that we could improve the fuel economy of our vehicles.
 - (c) Do you see any disadvantages to increasing the fuel economy of vehicles? If so, what are they?

Air Pollution Questions

Emissions from vehicles and from industrial plants get mixed with the air that we breathe. Two of the more common pollutants in the air are nitrogen dioxide and sulphur dioxide. The rain dissolves these and other substances and they come back to the earth in the form of "acid rain." This rain falls everywhere and causes environmental damage.

To help prevent this, cars and factories have devices which "scrub" their exhaust. These scrubbers remove some of the pollutants from the exhaust before they can enter the atmosphere and produce acid rain.

The concentration of pollutants in exhaust is measured in parts per million (ppm).

Doing the questions that follow will help you to increase your understanding of the mathematics of cleaner air.

1. A scrubber unit installed in a factory removes half of the pollutants each time the exhaust gas passes through it. Untreated exhaust contains 2,000 ppm of contaminants.

(a) Complete the table of values below which show values of

n - number of times the exhaust gas passes through the scrubber

c - the concentration in ppm of contaminants that remain in the exhaust gas

n	1	2	3	4	5	6
c						

- (b) Plot the ordered pairs from the table of values in part (a). Number of times breathed on an x axis and concentration in ppm on a y axis.
 - (c) Could all of the contaminants in the exhaust gas be removed in this way? Explain.
2. A company installed a scrubber which removes one-third of the pollutants each time exhaust gas passes through it. Untreated exhaust contains 1,500 ppm of sulphur dioxide. In its annual report the company states that by passing

exhaust gas through the scrubber three times, all of the sulphur dioxide will be removed. You believe this statement to be false. Write a short letter to the company which explains and corrects its error.

3. A scrubber removes two-thirds of the pollutants each time exhaust gas passes through it. Before treatment, the gas contains 1,200 ppm of contaminants.
 - (a) What is the concentration of contaminants in the gas after it has passed through the scrubber 2 times?
 - (b) After the gas has passed through the scrubber 2 times, what fraction of the contaminants has been removed and what fraction remains?
4. Before exhaust gas can be released into the air, it must contain less than 200 ppm of sulphur dioxide. If untreated exhaust contains 3,600 ppm of sulphur dioxide and if a scrubber can remove half of the pollutants each time the gas passes through it, how many times should the gas be treated before it is released?
5. A manufacturing plant passes its exhaust gas through three cleaning stations before it is released into the atmosphere. Station A removes three-quarters of the pollutants, station B removes one-third of the pollutants, and station C removes half of the pollutants.
 - (a) What fraction of the pollutants will be removed after the gas passes through all three stations?
 - (b) Does it matter in which order the gas passes through the three stations? Explain.
 - (c) If untreated exhaust contains 4,500 ppm of pollutants, what will be the concentration of pollutants after the gas has been cleaned by all three stations?
 - (d) A problem with station B is causing it to work at 50% efficiency. What percent of the pollutants will be emitted into the atmosphere after treatment by all three stations?



Topic 5
**Greenhouse Gas
Emissions**

(1–2 lessons)



This lesson focuses on the greenhouse gases emitted by vehicles. Students will learn about greenhouse gases, discover how to correlate fuel economy with CO₂ emissions, and will conduct an experiment and answer questions about the greenhouse gases emitted by automobiles. They will choose a writing activity from a number of follow-up writing alternatives. Some of the academic tasks are: hypothesizing, expressing reasons and explanations,

describing developments and changes, writing instructions, drawing conclusions, presenting and discussing results, evaluating, defining terms, comparing and contrasting, asking questions, selecting relevant points, skimming and scanning, listening for specific information, and following instructions.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 2.2 Use several visual techniques...

SLO 4.5 Experience and consider academic texts...

SLO 6.1.1 Use advanced organization...

SLO 6.1.5 Use selective attention...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.9 Use summarization...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.3.1 Use questioning for clarification...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Sequence 1

Activation

First, ask groups of four students to create a Word Splash that visually presents what they know about greenhouse gases. They can use graffiti-type writing and different colours that symbolically go with their words. As a class, look at the Word Splashes. Compare, contrast, and discuss.

Next, present students with **Handout 2-32: "Greenhouse Gases: Background Information"** (if you have visuals, use them at this stage). Ask: why is this a good article for using skimming and scanning? (*Title and subtitles help the reader predict the content of these sections.*) Students work in their quads, using skimming to get a feel for the organization of the article, and then scanning to answer the focus questions in **Handout 2-33: "Focus Questions: Greenhouse Gases."**

Have students meet as a class to discuss and share their answers. Extend the discussion to ask students about how they contribute personally to the emission of greenhouse gases. To see how much carbon dioxide they produce, they can visit the American Forests website <www.americanforests.org> and click on "Personal Climate Change Calculator." Remind them of the "Blowing Up Your World" activity from Topic 2A.

Language Features

Vocabulary

symbols for and names of greenhouse gases; acronyms for titles of organizations

Structures

Imperative verbs used in the questions: define, determine, explain, identify, suggest how, explore, contrast, hypothesize, list, place. These verbs occur in questions across the curriculum and are important for students to understand.

comparative and superlative forms, and use of definite article with superlatives in Handout 1

Student Learning Tasks**Assignment**

In groups of four, create a Word Splash that visually presents what you know about greenhouse gases. Use graffiti-type writing and different colours that symbolically go with your words. (■)

Look at the Word Splashes. Compare, contrast, and discuss. (■)

Use skimming to get a feel for the organization of the article, and then scanning to answer the focus questions in **Handout 2-33: "Focus Questions: Greenhouse Gases."** (■) As a class, discuss and share answers. (■)

See how much carbon dioxide you produce by visiting the American Forests website <www.americanforests.org/> and clicking on "Personal Climate Change Calculator."

Teacher Notes and References

Handout 2-32: "Greenhouse Gases: Background Information"

Handout 2-33: "Focus Questions: Greenhouse Gases"

Optional Website: American Forests at: <www.americanforests.org>

You may want to find graphs, visuals, or statistics about the effects of greenhouse gases to use as visual stimulators in the activation. The background material is provided.



Handout 2-33 includes a list of focus questions. You may choose to create others, based on the needs of students. These are only suggestions. The format of the article is appropriate for skimming and scanning.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 2.1.3 Use developing control of grammatical features...

SLO 6.2.5 Use deduction and induction ...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.3.1 Use questioning for clarification...

SLO 6.3.2 Use co-operation...

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 2.1.3 Use developing control of grammatical features...

SLO 4.1 Use language to encourage...

SLO 6.3.1 Use questioning for clarification...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.2.7 Use elaboration...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Sequence 2

Preparation for Main Activity

Step 1: Focus students' attention on personal vehicles, such as cars, pick-up trucks, sport-utility vehicles (SUVs), and vans, as sources of anthropogenic greenhouse gases such as carbon dioxide (CO₂). Distribute **Handout 2-34: "Investigating the Carbon Dioxide Emissions of Automobiles."** Review the parts of the activity with the students. Together, have students read over the following sections of the activity: Background Material, Problem, Materials, and Hypothesis.

Ask students to hypothesize: Which type of vehicles are the biggest sources of CO₂? Is the amount of CO₂ they produce linked to certain characteristics of the vehicles such as engine size, fuel consumption, or type of transmission (manual or automatic)? Record different hypotheses.

Ask students how they could test their hypotheses. (*various answers*)

Step 2: Divide the class into an appropriate number of dyads. Have each group reach a consensus about the hypothesis they would like to test. Under the appropriate section of the activity, have students record their hypotheses and explain the reasoning behind them. Select a variety of vehicles (the same number as your number of groups). Try to choose different models, makes, years, and types of vehicles.

Language Features

Vocabulary

anthropogenic, fuel consumption, hypothesis

Discourse Features

format of a report

Structures

irregular plural formation of some scientific terms: hypothesis~hypotheses, datum~data, etc.

Student Learning Tasks

Read over the following sections of **Handout 2-34**:
“Investigating the Carbon Dioxide Emissions of Automobiles”:
Background Material, Problem, Materials, and Hypothesis. (C)

Hypothesize: Which cars are the biggest sources of annual CO₂ production? Is the amount of CO₂ they produce linked to certain characteristics of the vehicles such as engine size, fuel consumption, or type of transmission (manual or automatic)? Record your hypotheses. (C)

In dyads, reach a consensus about the hypothesis you would like to test.

Record your hypotheses and explain the reasoning behind them.

Select a particular type of vehicle that you would like to research.

Teacher Notes and References

Handout 2-34: “Investigating the Carbon Dioxide Emissions of Automobiles”

Outcomes

SLO 1.1 Engage with increasingly difficult texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 2.1.3 Use developing control of...features...

SLO 3.2 Develop and implement a plan...

SLO 4.2 Communicate effectively to work with others...

SLO 4.4 Manage group action...

SLO 4.6 Respond to and critique...perspectives...

SLO 4.7 Use the English language to participate...

SLO 6.3.2 Use co-operation...

SLO 6.1.5 Use selective attention...

SLO 6.1.7 Use problem identification...

SLO 6.2.7 Use elaboration...

SLO 6.2.11 Use transfer...

SLO 6.3.1 Use questioning for clarification...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence**Main Activity**

Introduce students to the Natural Resources Canada Fuel Consumption Ratings. (See Teacher Notes and References column.)

Students will require some time to become familiar with how to enter data to get the results they need. For instance, search results can sort vehicles according to model, fuel efficiency, or CO₂ emissions per year (with average driving habits). As an alternative, a complete guide can be downloaded and printed off for later use by students. This option will be very effective in instances where access to the Internet is limited by time or circumstances.

When the procedures are understood, have the students proceed with the activity in the dyads formed earlier. On returning to class, have a short discussion regarding their results.

Which hypotheses were supported by the research into CO₂ emissions? Were any of the hypotheses NOT supported by the data? Can you come up with any explanations as to why some of your initial ideas were not correct?

Have students research the fuel economy of the vehicle they have chosen by submitting its data to the website <www.fueleconomy.org>. This is in order to answer Part B questions in the Conclusions section of **Handout 2-34**:

"Investigating the Carbon Dioxide Emissions of Automobiles."

Language Features**Vocabulary**

carbon dioxide, emissions, fuel consumption ratings, greenhouse gases

Structures

imperative verbs

prepositions

comparative and superlative forms

listening for imperative verbs and prepositions

Student Learning Tasks

After completing the activity, discuss the results.

In dyads research the fuel economy of vehicles you have chosen by submitting its data to the website <www.fueleconomy.org>. Answer Part B questions in the conclusions section of the report (**Handout 2-34**: "Investigating the Carbon Dioxide Emissions of Automobiles").

Teacher Notes and References

Handout 2-34: "Investigating the Carbon Dioxide Emissions of Automobiles"

Internet Resources:

Natural Resources Canada Fuel Consumption Ratings information on emissions from a wide variety of vehicles, can be accessed online at:

<<http://oee.nrcan.gc.ca/transportation/tools/fuelratings/ratings-results.cfm>>.

There, you can select the make, model, and year of the vehicle and bring up information on fuel consumption and CO₂ emissions in kilograms per year (kg/yr.) under average Canadian driving conditions.

See the complete emissions guide at:

<<http://oee.nrcan.gc.ca/transportation/tools/fuelratings/fuel-consumption-guide-2006.pdf>>.

The fuel economy of different vehicles can be compared at: <www.fueleconomy.org>.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 1.3 Develop and express a personal position...

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.1.1 Analyze and edit texts...

SLO 2.1.2 Use standard Canadian spelling...

SLO 2.1.3 Use developing control...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 2.3.1 Use the structures and language features...

SLO 4.3 Use clear and respectful language...

SLO 6.1.5 Use selective attention...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.7 Use elaboration...

SLO 6.2.9 Use summarization...

Instructional and Learning Sequence

Writing Activities

Have each set of partners discuss the observation questions, then answer them individually using complete sentences and short paragraphs. Next, they should use the answers to the questions to help them formulate their conclusions. Questions 1 and 2 of the "Conclusions" section will require short paragraph answers and question 5 will require a longer answer. Ask students to use at least five new vocabulary words in these answers.

Language Features

Vocabulary

emit, pollutants, concentration, investigation, in common

Structures

comparative and superlative forms, active and passive voice, appropriate use of tense in writing activities

Discourse Features

using the wording in questions to help formulate declarative sentences

Roundup

Have students create another Word Splash, individually this time, to show what they have learned about the human impact on global warming as a result of this lesson.

OR

Have students think about their own city or country of origin and predict what they think the effects of global warming will be for this particular area.

Student Learning Tasks**Teacher Notes and References****Assignment**

- a) Discuss the observation questions with a partner. (P)
- b) Answer questions individually using complete sentences and short paragraphs. (I)
- c) Use the answers to the questions to help formulate your conclusions. Questions 1 and 2 of the "Conclusions" require short paragraph answers and question 5 requires a longer answer. Use at least five new vocabulary words in these answers.

Assignment

Create another Word Splash to show what you have learned about the human impact on global warming as a result of this lesson. (I)

Greenhouse Gases: Background Information

Greenhouse gases are any gases that absorb infrared radiation and then emit that stored energy as heat. By trapping infrared radiation they contribute to warming of the atmosphere through a process known as the greenhouse effect.

1. Water Vapour (H₂O)

Water vapour is the largest contributor to the greenhouse effect. The amount of water vapour in the atmosphere is determined primarily by the water cycle rather than by human activity. Water evaporates from the surface. Eventually this water condenses and returns to the surface as precipitation. Once global warming begins to occur the amount of water vapour becomes subject to a positive feedback effect. The warmer the air gets the more water vapour it can hold and the more evaporation will occur.

2. Carbon Dioxide (CO₂)

Carbon dioxide is responsible for a majority (60%) of the anthropogenic greenhouse effect due to human activity. A small amount of carbon dioxide exists naturally in the atmosphere about 0.035% of all gases in the atmosphere. Humans also produce a lot of carbon dioxide. The United States produces the most on a per capita basis (over two tons per person annually). Visit the American Forests

website if you want to know how much carbon dioxide you produce. To some extent the amount of carbon dioxide in the atmosphere is determined by the carbon cycle. The oceans and plants absorb some carbon dioxide, but human activity produces it faster than it can be absorbed. Carbon dioxide may last 50 to 200 years in the atmosphere before being "scrubbed out" through rainfall as weak carbonic acid.

Sources

- **Fossil Fuel combustion:** The burning of fossil fuels (coal, oil, and natural gas) is the largest single source of greenhouse gases from human activity. Coal produces the most carbon dioxide of all the fossil fuels.
- **Deforestation:** Deforestation is the second largest source of greenhouse gases due to human activity. Destruction of the forests can release the carbon stored in trees if they are burned up. If trees are not replanted they cannot absorb carbon dioxide in the future.
- **Cement manufacturing:** Carbon dioxide is produced during the manufacture of cement. When lime (CaCO₃), an ingredient in cement, is heated carbon dioxide is released into the air. *(continued)*



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Greenhouse Gases: Background Information (continued)

3. Methane (CH₄)

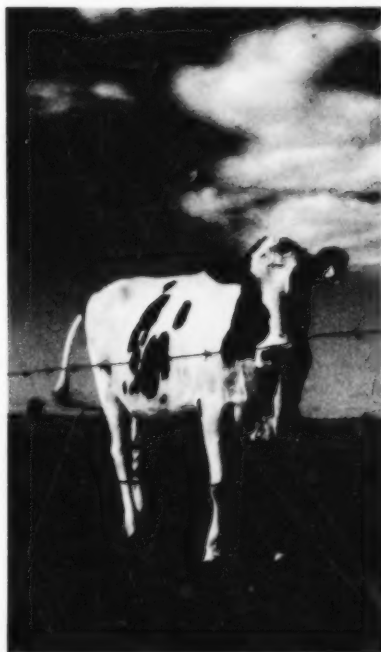
Methane, a hydrocarbon also known as natural gas, is used as a fuel in homes and industry.

Sources

- **Livestock:** Livestock produce methane through the process of "enteric fermentation" of food in their digestive tract, and through their manure. Cattle are the greatest source of methane through these processes, followed by swine.
- **Agriculture:** The main source of methane in agriculture is flooded rice paddies where microorganisms and bacteria decompose anaerobically in the soil.
- **Waste Dumps:** The anaerobic decomposition of wastes in land fills and dumps results in methane. Sometimes the methane is collected and used as a fuel.
- **Coal Mining and Natural Gas Production:** Methane can leak when coal is mined. Sometimes it leaks or is deliberately vented during natural gas production.
- **Wetlands:** The microorganisms and bacteria in wetlands create methane when they decompose anaerobically in the soil.

4. Other Greenhouse Gases

- **Nitrous Oxide (N₂O):** This greenhouse gas enters the atmosphere from fertilizers used in agriculture, and from automobile exhaust.
- **Chlorofluorocarbons (CFCs):** A very potent greenhouse gas. It is used as a propellant in aerosol cans, in creating foam plastics, coolant in refrigerators and air conditioners, as a solvent in cleaners, and as an ingredient in fire extinguisher materials. Because it destroys ozone, which is also a greenhouse gas, some of its contributions to the greenhouse effect are balanced out. Recently the levels of CFCs in the atmosphere have stabilized thanks to the Montreal Protocol of 1987 which restricts their use.
- **Ozone (O₃):** This much publicized gas is known more for its ability to block harmful ultra-violet radiation than its ability to absorb infrared rays, but is nonetheless a greenhouse gas. The amount of ozone is declining in the upper atmosphere but is found in increasing amounts near the earth's surface as a pollutant.



Focus Questions: Greenhouse Gases

Work together to answer the following questions in point form:

1. Define greenhouse gases.

2. Determine which gas is the largest contributor to the greenhouse effect. Explain how it contributes to a natural warming of Earth.

3. Identify the sources of CO_2 that contribute to the anthropogenic component of the greenhouse effect.

4. Suggest how livestock add to the greenhouse effect.

5. Contrast the contribution of CFCs to global warming to that of high atmosphere ozone loss.

6. Contrast the present concentration of greenhouse gases with the pre-industrial concentration. Hypothesize about why these specific changes have occurred.



Investigating the Carbon Dioxide Emissions of Automobiles

Background Information: (Summary) Today humans release around 5 billion tonnes of carbon to the atmosphere every year through fossil burning and cement manufacture. Approximately another 1.36 billion tonnes per year are released through land use changes such as deforestation. These releases result in another increase of atmospheric CO₂ about 1% per year. This increase is the most plausible explanation for the warming trend we have seen since the mid-19th century.

Problem: Ask students to hypothesize: Which type of vehicles are the biggest sources of CO₂ emissions? Is the amount of CO₂ they produce linked to certain characteristics of the vehicles, such as engine size, fuel consumption, or type of transmission (manual or automatic)? Record different hypotheses.

Hypothesis: Before doing the experiment, make an educated guess about the outcome.

Briefly explain the reasoning behind your hypothesis.



Investigating the Sources of Greenhouse Gases Observations:

1. **Determine and explain** whether the cars that emit the highest level of CO₂ have anything in common.

2. **Determine and explain** whether the cars that emit the lowest level of CO₂ have anything in common.

3. a. **Name** the type and year of automobile that emitted the highest level of CO₂ (of those you chose to investigate).

(continued)

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Investigating the Carbon Dioxide Emissions of Automobiles (continued)

b. The lowest?

4. Verify whether the automobile with the largest engine displacement also has the greatest CO₂ emissions.

5. Describe your level of confidence in the accuracy of this data.

6. Suggest a better way, if there is one, to do this investigation.

7. List and explain our sources of experimental error (if any).

(continued)

Investigating the Carbon Dioxide Emissions of Automobiles (continued)

Conclusions:**Part A:**

1. Was your hypothesis supported by this experiment? **Explain** why or why not.

2. **Suggest** ways that Canada can encourage people to drive less or use more efficient means of transportation as a way to reduce greenhouse gas emissions such as carbon dioxide.

Part B:

1. **Calculate** how many km your chosen car can go on 1ℓ of gasoline based on the data at <www.fueleconomy.org>.
2. **Given that** 10 kg of CO₂ are produced per 4ℓ of gasoline consumed, how many kg of CO₂ did your car produce from one tank of gas?
3. **Calculate** how many kg of CO₂ your car would produce in a year if you travel 300 kilometres per week.

(continued)

Investigating the Carbon Dioxide Emissions of Automobiles (continued)

5. **Given that** global warming is likely to be a reality over the next 200 years, human beings will have to make many changes in order to adapt to a warmer climate. However, this is nothing new. Over the course of history people have had to adapt to many different changes in their living environment. Keeping this in mind, agree or disagree with the following statement in a response of about 250 words: Given the adaptability of human beings, the estimated future troubles caused by the effects of global warming are overestimated.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



Topic 6
**Endangered
Species**

(2 lessons)

In this lesson, students will take notes from texts and oral presentations, view for information, conduct Mind Map research, organize and summarize information on a simple topic, analyze the use of language to hedge predictions, and write a letter or email in support of a cause. At the same

time, they will become familiar with some Canadian wildlife and the issue of biological diversity.

Outcomes

SLO 4.1 Use language to encourage...

SLO 5.1 Identify common themes and symbols...

SLO 6.2.7 Use elaboration...

SLO 6.3.2 Use co-operation...

SLO 1.5 Examine and interpret various visual media...

SLO 6.1.3 Use directed attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

Instructional and Learning Sequence**Sequence 1****Activation**

Identify pictures of various Canadian animals, including several endangered species. Note the endangered ones.

Discuss the term "biological diversity." Note that it includes plants and insects as well as animals. Have students name species at risk in their countries of origin.

Language Features**Vocabulary**

animal names, biological diversity, species, wildlife, extinct, extirpated, endangered, threatened, potential

Note: In this lesson, "endangered" refers to threatened, extirpated, and endangered.

Optional: Have students view one of the *Hinterland Who's Who* videos. View first without sound, then let students predict the subtopics and vocabulary that might be included in this short description of an animal. View again with sound to verify predictions.

Language Features**Vocabulary**

animal names, habitat, range, breed, mate, range, dwindling, exploitation, native vs. exotic, alter, disturb, decline, conservation, ecosystem, replenish, be aware of

Discourse Features

organization of a short documentary (listening)

Academic Language Functions

predicting

listening for main ideas

Student Learning Tasks

Discuss the term "biological diversity." Name species at risk in your country of origin. (C)

Assignment

View video without sound to predict the subtopics and vocabulary that might be included in this short description of an animal. View again with sound to verify predictions.

Teacher Notes and References

Visuals from Canadian Wildlife Service at:

<<http://collections.ic.gc.ca/environmental/environment/g-endangered.html>>



Hinterland Who's Who videos are available for download at <www.hww.ca/index_e.asp>.



These videos are approximately one minute long. The picture quality is better viewed on an individual computer, but can be used with a projector. The sound quality is good.

This is an updated version of the CBC series familiar to many Canadians. The website has many additional lesson plans and resources that can be easily adapted for EAL.

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.2 Use several visual techniques...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 3.1 Seek, organize, and synthesize information...

SLO 6.1.5 Use selective attention...

SLO 6.2.1 Use resourcing to access...

SLO 6.2.4 Use note taking...

Instructional and Learning Sequence

Brainstorm: Why protect species at risk? What are the threats to biodiversity?

If students don't have any ideas, refer them to the World Resources Institute website. Note that this is a special interest group. Besides reading the introduction to the topic of biodiversity, examine the layout, topics, and possible bias. Ask the students what a reader would expect to find at this website.

Sequence 2

Have students select a species at risk in Canada and examine its fact sheet on the website. Scan for the following information:

- Species/Description (name and appearance)
- Range (distribution)
- Habitat Requirements (characteristics)
- Endangered Potential (threats to survival)
- Conservation (protection/management measures)

Individually or in a group, have students choose one species and research from the available information. Then record essential information using a T-List or Cornell notes.

Language Features**Vocabulary**

words related to animals' physical characteristics and behaviour; height, length, weight

Discourse Features

Note taking: omission of "small" words

Student Learning Tasks**Brainstorm the Questions:**

Why protect species at risk? What are the threats to biodiversity? (C)

If needed, look at the World Resources Institute website on biodiversity.

Assignment

Individually or in a group, select a species at risk in Canada and examine its fact sheet on the website. Scan for the following information:

- Species/Description (name and appearance)
- Range (distribution)
- Habitat Requirements (characteristics)
- Endangered Potential (threats to survival)

Record essential information using a T-List or Cornell notes. (I)
(E)

Teacher Notes and References

World Resources Institute
"Biodiversity and Protected
Areas" at:

<www.wri.org/biodiv/cwb-iii.html>



Try a Mind Map, placing
"threats to biological diversity"
in the middle and using the six
questions (5 Ws and H) as
spokes, or use a cause/effect organizer.



Publications on species at risk
at: <[www.speciesatrisk.gc.ca/
publications/default_e.cfm](http://www.speciesatrisk.gc.ca/publications/default_e.cfm)>

Outcomes

Instructional and Learning Sequence

SLO 2.3.1 Use the structures and language features...

SLO 6.2.9 Use summarization...

SLO 6.2.13 Use recombination...

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.5 Examine and interpret various visual media...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.7 Use problem identification...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.3.1 Use questioning for clarification...

SLO 6.3.2 Use co-operation...

Writing Task

Collect the fact sheets. Then have students use their notes to write one or two paragraphs summarizing the description of the animal, the problem, and any possible solutions.

Language Features

Structures

order of adjectives
sentence combining

Academic Language Functions

summarizing

Optional Listening/Speaking: Distribute the list of species at risk and let students read their descriptions to the class or in small groups, while the other students attempt to identify the animal from the list.

OR

View one or more of the *Hinterland Who's Who* videos, using the dictogloss strategy. Ask students to compare their version with the printed transcripts.

Student Learning Tasks**Teacher Notes and References**

Read your descriptions to the class or in small groups, while the other students attempt to identify the animal from the list. (G) (C)

OR

View one or more of the *Hinterland Who's Who* videos and compare your version with the printed transcripts.

Assignment

Use your notes to write one or two paragraphs summarizing the description of the animal, the problem, and any possible solutions. (I)



For information of the dictogloss technique, see "Teaching and Learning EAL in the Senior Years" in the Appendices of this document.

Outcomes

SLO 2.2 Use several visual techniques...

SLO 2.3.3 Produce effective oral presentations.

SLO 2.4 Use the steps of the writing process...

SLO 3.2 Develop and implement a plan for researching...

SLO 6.1.4 Use functional planning...

SLO 6.2.1 Use resourcing to access...

SLO 6.2.2 Use repetition to imitate a language model...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.12 Use inferencing to guess the meanings...

Instructional and Learning Sequence

Optional Presentation

Ask students to research a species at risk in their country of origin or elsewhere and present their findings to the class with the aid of a computer or poster presentation, using the outline from the beginning of the lesson as a structure.

Discuss: From researching these animals, what do you think are the biggest challenges facing Canadian (or world) wildlife? What can individuals and governments do to protect biological diversity?

Language Features

Discourse Features

parallel structure in point form (for presentation)

Student Learning Tasks**Assignment**

Research a species at risk in your country of origin or elsewhere and present your findings to the class with the aid of a computer or poster presentation, using the outline from the beginning of the lesson as a structure.

Discuss: What do you think are the biggest challenges facing Canadian (or world) wildlife? What can individuals and governments do to protect biological diversity? (I) (C)

Teacher Notes and References

Websites, magazines, or books addressing species at risk (teacher-provided)



This can work well with a multi-level class; vary the degree of scaffolding for students. It can become the focal experience for the topic.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 1.4 Show an awareness of organizational patterns...

SLO 1.6 Interpret a range of texts...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 2.4 Use the steps of the writing process...

SLO 6.1.1 Use advanced organization...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.2.2 Use repetition to imitate a language model...

SLO 6.2.4 Use note taking...

SLO 6.2.12 Use inferencing to guess the meanings...

Instructional and Learning Sequence

Sequence 3

Introduce **Handout 1: "Climate Change and Wildlife."**

Read the first two paragraphs together and identify the main idea, source, intended audience, and purpose for writing. Predict the contents of the article. Note the use of future "will," implying certainty in the first paragraphs. Watch for hedging terms in subsequent development. Ask students to continue to read independently, underlining every use of the future tense and hedging strategies.

Post-reading question: How does the article temper the initial predictions?

OR

Students can practise hedging strategies by imagining a different scenario: If global cooling occurs, what would be the effect on warmer countries? (speaking or writing)

Language Features

Vocabulary

adapt, hardest hit, shift, tundra, boreal, vulnerable, scenario, exacerbate, irreversibly, reproductive capacity, incubating

From AWL: abandon, adapt, affect, altered area, available, capacities, create, despite, displaced, diversity, emergence, energy, enhance, erosion, global, impact, individuals, isolated, layers, migration, physically, predict, primary, projected, ranges, react, region, regions, rely, require, restricted, scenarios, shift, significantly, source, virtually

Discourse Features

passive structures for distancing

language of prediction and various hedging strategies (is expected to, could be, if predictions of... come true, increase the likelihood, projected increases, will be... unless) subordinate adverb clauses to express contrast or cause (although the...; despite the...; since the...)

Student Learning Tasks

As a class or independently, read the first two paragraphs of **Handout 2-35: "Climate Change and Wildlife"** and identify the main idea, source, intended audience, and purpose for writing.

Predict the contents of the article. (C)

Continue to read independently, underlining every use of the future tense and hedging strategies.

OR

Practise hedging strategies by imagining a different scenario (speaking or writing): If global cooling occurs, what would be the effect on warmer countries?

Teacher Notes and References

Handout 2-35: "Climate Change and Wildlife"



The tone of certainty is a common journalistic technique to attract readers' attention; therefore, readers should not necessarily jump to drastic conclusions based on headlines or lead paragraphs.

Outcomes

SLO 1.4 Show an awareness of organizational patterns...

SLO 1.6 Interpret a range of texts...

SLO 2.1.1 Analyze and edit texts...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 2.4 Use the steps of the writing process...

SLO 4.7 Use the English language to participate in community...

SLO 5.7 Select and present ideas ...keeping in mind the intended audience.

SLO 6.1.4 Use functional planning...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.2 Use repetition to imitate a language model...

Instructional and Learning Sequence

Sequence 4

Preparation: Review students' ideas about why species are at risk.

Introduce **Handout 2-36: Gapfill Reading: "Why Do Some Species Become at Risk in Canada?"**

Prepare by reading the first paragraph to determine the purpose of the reading.

Words from the AWL have been omitted in this version, but students could use one or two paragraphs as a listening exercise, omitting structure words.

Language Features

Vocabulary

abandon, affect, affected, affects, construction, conversion, decline, extraction, factor, factors, file, generation, identified, percent, restricts, status, survive, vehicle, vehicles
focus on word families

Sequence 5

Writing Task

Have students write a polite letter or an email to a government or public organization, supporting the protection of a species. Use business letter format or, if writing an email, note the public and more formal register required.

Language Features

Discourse Features

formal register for business; business letter and email format

Extension: Many other excellent activities are available at "Bagheera In the Wild."

"Endangered Species" is an extensive collection of information and links to additional resources. It is U.S.-based, but with a world focus.

Student Learning Tasks**Assignment**

Listen as **Handout 2-36**: "Gapfill Reading" is read (C) and use the selected words from the AWL to complete the reading.

Assignment

Write a polite business letter or an email to a government or public organization supporting the protection of a species. If writing an email, note the public and more formal register required. (I)

Teacher Notes and References

Handout 2-36: "Gapfill Reading: Why Do Some Species Become at Risk in Canada?"

Handout 2-37: "Gapfill Reading: Why Do Some Species Become at Risk in Canada? (Answer Key)"



Sample letters available from Animals Asia Foundation at:
<[www.animalsasia.org/beInvolved/create Change/cc003.html](http://www.animalsasia.org/beInvolved/createChange/cc003.html)>



Bagheera In the Wild at:
<www.bagheera.com/inthewild/class_activities.htm>

Endangered Species at: <<http://eelink.net/EndSpp/>>

Climate Change and Wildlife

Climate change caused by increasing emissions of greenhouse gases will affect the health and diversity of plants and animals in virtually every place on earth—and Canada's north is expected to be among the hardest hit.



Increases in surface temperatures, precipitation and the frequency of severe weather events, a rise in sea level and a decrease in sea-ice will cause many habitats to change ten times faster than they have since the last ice age.

These changes will force species to adapt or shift their ranges more quickly than they ever have in the past, or die off and be replaced by more adaptable species. Those at greatest risk of extinction are species that require different habitats at different stages of their lives, like amphibians, or that inhabit areas that are physically restricted, such as islands, isolated lakes, and mountain tops.



Hay River, south of Great Slave Lake, NT, Canada. Photo: Elaine Tucker

In keeping with predictions that changes will be greatest at high latitudes and altitudes, Canada's low Arctic tundra and Muskwa-Slave Lake boreal forests are among the most vulnerable regions in the world. Surface warming in the Arctic is expected to be significantly higher than in the rest of Canada and the world. The geographic ranges of plant and animal

species are also expected to shift northward and upward in altitude, increasing competition with species already found in the area.

It is expected that the tundra will shrink by as much as two-thirds as other plant species move in to replace native vegetation. Most climate change scenarios suggest that the zone suitable for boreal forests could be displaced as much as 550 kilometres northward over the next century.



Moose caught on road between huge snow banks. Heavy snowfalls in Mount Pearl, NF, March 2001. Photo: Randy and Judy Boone.

Although milder winters could enhance the reproductive capacities of caribou and other species, heavy winter snows and the melting and freezing of snow cover could force them to expend more energy feeding or prevent them from reaching their food. Ice and snow layers may also trap carbon dioxide in the burrows of small mammals, and either poison them or force them to the surface.

Warmer temperatures could create other problems for animals by causing changes in the timing and extent of sea-ice cover. Polar bears in western Hudson Bay, which rely on sea-ice for hunting seals, will disappear from the region if predictions that the ice will melt completely by 2100 come true. Earlier breakup of freshwater ice on lakes and rivers in spring could affect migration patterns, and increase the likelihood of drowning.

Reductions in sea ice also mean reductions in the ice edge around open water. This important part of the marine ecosystem supports a large population of fish, which provide food for a variety of marine birds and mammals.

(continued)

Environment Canada: Climate Change and Wildlife (continued)

Warming makes ecosystems more vulnerable to disease, parasites and insects and other pests. The earlier emergence of mosquitoes in northern Hudson Bay has already resulted in the death of some incubating seabirds, and forced others to abandon their nests.



Coastal erosion, Prince Edward Island.

Although Arctic ecosystems are expected to be the hardest hit, more southern regions of Canada will also be affected. Fish on both coasts and in rivers, lakes and streams are expected to head further north. Changes in river and stream runoff, due to less snow pack, an earlier ice break-up, a stronger spring flow, and a reduced summer flow, will also greatly impact aquatic ecosystems.

Both the Atlantic and Pacific coasts will see a rise in sea level if global warming continues, resulting in an increase in coastal erosion and flooding, and a loss of coastal wetlands. Fire patterns are expected to change in most of Boreal Canada, affecting forestry practices and habitat available to wildlife. As temperatures increase, crops such as wheat can be grown farther north, causing further losses of wildlife habitat.

Despite projected increases in precipitation, scientists expect there will be a decrease in water availability in many southern regions of the country—particularly the prairies—due to increased evaporation caused by warming. This will further exacerbate water level problems in aquatic ecosystems such as wetlands and marshes, and may cause some to dry up completely.

Although there is no way to predict exactly how certain species will react to climate change, our global biodiversity will be altered irreversibly unless immediate steps to reduce national and international emissions of greenhouse gases are taken. Since the burning of fossil fuels is a primary source of the greenhouse gas carbon dioxide, individuals can take action to reduce climate change by cutting down on fuel consumption—at home, at work, and on the road.

Gapfill Reading: Why Do Some Species Become at Risk in Canada?

Instructions: Fill each gap with the best word from the Word List. Note that some words are used more than once in different forms.

The single most prevailing _____ responsible for the endangerment of species today is habitat loss and degradation. In fact, about 60 _____ of species that the Committee on the _____ of Endangered Wildlife in Canada (COSEWIC) _____ as being at risk are _____ by habitat problems. If a species cannot find suitable conditions in which to live, it simply will not _____.

As the human population grows, development increases and spreads over the landscape to satisfy human wants and needs. The _____ of houses, buildings, and roads; logging of vast tracts of forest for paper and building materials; mineral _____ and _____ of wild habitats into agriculturally productive fields all mean that habitat for wild species shrinks. And when habitat shrinks, species are squeezed out.

A habitat does not have to be totally destroyed to make it unsuitable for some species. The mere presence of people and associated disturbance can cause some species to _____ certain habitat or prevent them from breeding successfully.

And human presence _____ species in many other ways as well. _____ on roads are particularly dangerous to some snakes that like to bask on the warm pavement and to some birds that tend to feed near roadways. The lights from _____ and from street lights and buildings have been shown to seriously _____ some moth populations. Control of water flow in rivers, usually for the _____ of electricity, changes conditions downstream, often rendering these water bodies unsuitable for certain species, or _____ their ability to travel to parts of the system they need for feeding or to reproduce. The building of dams or tilling of soil near rivers and streams causes siltation and increases water turbidity, _____ responsible in the _____ of some fish and mollusc populations.

Word List:

abandon

affect

affected

affects

construction

conversion

decline

extraction

factor

factors

file

generation

identified

percent

restricts

status

survive

vehicle

vehicles

Gapfill Reading: Why Do Some Species Become at Risk in Canada?
(Answer Key)

The single most prevailing **factor** responsible for the endangerment of species today is habitat loss and degradation. In fact, about 60 **percent** of species that the Committee on the **Status** of Endangered Wildlife in Canada (COSEWIC) **identified** as being at risk are **affected** by habitat problems. If a species cannot find suitable conditions in which to live, it simply will not **survive**.

As the human population grows, development increases and spreads over the landscape to satisfy human wants and needs. The **construction** of houses, buildings, and roads; logging of vast tracts of forest for paper and building materials; mineral **extraction**; and **conversion** of wild habitats into agriculturally productive fields all mean that habitat for wild species shrinks. And when habitat shrinks, species are squeezed out.

A habitat does not have to be totally destroyed to make it unsuitable for some species. The mere presence of people and associated disturbance can cause some species to **abandon** certain habitat or prevent them from breeding successfully.

And human presence **affects** species in many other ways as well. **Vehicles** on roads are particularly dangerous to some snakes that like to bask on the warm pavement and to some birds that tend to feed near roadways. The lights from **vehicles** and from street lights and buildings have been shown to seriously **affect** some moth populations. Control of water flow in rivers, usually for the **generation** of electricity, changes conditions downstream, often rendering these water bodies unsuitable for certain species, or **restricts** their ability to travel to parts of the system they need for feeding or to reproduce. The building of dams or tilling of soil near rivers and streams causes siltation and increases water turbidity, **factors** responsible in the **decline** of some fish and mollusc populations.



Topic 7
**Ecological
Footprint**

(1–2 lessons)

Students will read, interpret, and produce graphical representations of statistics; skim and scan articles for information; classify items according to criteria; draw inferences; compare viewpoints; synthesize information from several sources; and conduct an informal interview.

Outcomes	Instructional and Learning Sequence								
SLO 1.5 Examine and interpret various visual media... SLO 1.6 Interpret a range of texts... SLO 6.2.7 Use elaboration... SLO 6.3.1 Use questioning for clarification... SLO 6.3.2 Use co-operation...	Sequence 1 Activation Review the purpose of political cartoons. Together, analyze a political cartoon related to human consumption for situation, what or who is being satirized, and what the message is. <table border="1"> <tr> <td>Language Features</td> <td>Vocabulary</td> </tr> <tr> <td></td> <td>consume, consumption, words relevant to cartoon, per capita, GDP, renewable, non-renewable</td> </tr> </table> As a class, examine and discuss Handout 2-38: "Consumption Charts" to find the consumption of resources in various nations. Notice the title of the charts and structural features that communicate information. Note the countries with the highest and lowest consumption: were students surprised? It is also important to note that the second chart shows the highest growth in consumption rates. What could explain the growth? Model one or two statements about the information. Then students write statements and share with the class. <table border="1"> <tr> <td>Language Features</td> <td>Structures</td> </tr> <tr> <td></td> <td>Expressions of possibility—modals: must, could, might, may; adverbs: probably, likely, perhaps; passive voice</td> </tr> </table>	Language Features	Vocabulary		consume, consumption, words relevant to cartoon, per capita, GDP, renewable, non-renewable	Language Features	Structures		Expressions of possibility —modals: must, could, might, may; adverbs: probably, likely, perhaps; passive voice
Language Features	Vocabulary								
	consume, consumption, words relevant to cartoon, per capita, GDP, renewable, non-renewable								
Language Features	Structures								
	Expressions of possibility —modals: must, could, might, may; adverbs: probably, likely, perhaps; passive voice								

Student Learning Tasks

Analyze the political cartoon for situation, what or who is being satirized, and what the message is. (C)

Look at **Handout 2-38: "Consumption Charts"** and contribute to the discussion. (C)

Write one or two statements about the information to share with the class. (I)

Teacher Notes and References

Political cartoon related to human consumption (teacher-provided)

Appendix 11: How to Analyze Editorial Cartoons



Handout 2-38: "Consumption Charts"

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.7 Evaluate a given text...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.2 Use several visual techniques...

SLO 4.1 Use language to encourage...

SLO 6.1.1 Use advanced organization...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.2.12 Use inferencing to guess the meanings...

Instructional and Learning Sequence

Skim Handout 2-39: "Natural Resources and Wastes." What is the main topic? (renewable and non-renewable resources)

Preview the focus questions:

- What two human activities affect our environment?
- What is a renewable resource? Non-renewable?
- Why is the human impact on renewable resources even greater than on non-renewable resources?
- What is the writer's view of the danger of overusing our natural resources?
- What does the writer believe is the greatest threat to the environment? Why?

Have students scan article for answers to the questions.

Discuss the answers together.

Language Features

Vocabulary

From AWL: adaptation, affect, apparent, available, categories, constant, constantly, constrained, consumers, consumption, decades, declined, derive, despite, dramatic, economical, ensured, exploit, extract, final, focus, generated, global, impact, indication, issued, major, mechanism, mechanisms, modify, occupy, percent, projected, recoverable, remove, research, resource, substitutes, sufficient, technology, traditionally, ultimately

Student Learning Tasks**Teacher Notes and References****Assignment**

- a) Skim reading to preview:
- What two human activities affect our environment?
 - What is a renewable resource? Non-renewable?
 - Why is the human impact on renewable resources even greater than on non-renewable resources?
 - What is the writer's view of the danger of overusing our natural resources?
 - What does the writer believe is the greatest threat to the environment? Why?
- b) Scan article for answers to the questions. (I)
- c) Discuss answers. (C)



Handout 2-39: "Natural Resources and Wastes"



This reading uses many words from AWL.

Outcomes

SLO 2.2 Use several visual techniques...

SLO 4.1 Use language to encourage...

SLO 6.2.2 Use co-operation...

SLO 6.2.3 Use grouping of items to classify...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 4.1 Use language to encourage...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.7 Use elaboration...

SLO 6.2.12 Use inferencing to guess the meanings...

Instructional and Learning Sequence

Follow-up Activity

With a partner, have students look around the room or the school, or chart daily activities, and classify as many items as possible as renewable or non-renewable resources. Then students estimate a percentage for each, represent graphically, and compare charts.

Language Features

Academic Language Functions

classifying
estimating
comparing

Sequence 2

Have students discuss with a partner, then with the class, what a footprint represents (that a living being was present; gone now, but left a footprint as evidence; may cause damage; can follow them).

Ask students: How do you think human beings leave footprints in the environment?

Language Features

Vocabulary

footprint

Student Learning Tasks**Assignment**

With a partner, look around the room or the school, or chart daily activities, and classify as many items as possible as renewable or non-renewable resources. Estimate a percentage for each, represent graphically, and compare charts with the class. (P) (C)

Assignment

Discuss with a partner, and then with the class, what a footprint represents. (P) (C)

Teacher Notes and References

Visual: Cut-out of footprint or picture of footprints in the sand or on trail (teacher-provided)



Literal and perhaps metaphoric meanings may come out here. It is not a problem if students don't understand the symbolism.

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 6.1.1 Use advanced organization...

SLO 6.2.12 Use inferencing to guess the meanings...

Instructional and Learning Sequence

Choose one or both of: **Handout 2-40**: "Our Footprints—They're All Over the Place" and/or **Handout 2-41**: "Humanity's Footprint."

Preview focus questions for Handout 2-40: "Our Footprints—They're All Over the Place": How does the writer define "ecological footprint?" How many acres of productive land are needed to support the average North American lifestyle? What is the writer's view of the possible dangers of overusing natural resources? What does the writer see as the solution to the problem?

Scan and skim for answers to the preview questions. Follow with a more detailed reading, if desired.

AND/OR

Preview focus questions for Handout 2-41: "Humanity's Footprint."

Questions:

- What is the problem in the world context?
- What are the causes of the problem?
- What are the dangers?
- What is the suggested solution?
- Do you think the reading reflects one side of the issue? Could there be another side?

Language Features

Vocabulary

From Handout 3: replenished, shortages, stimulates, dump, exhaustion, famines

From Handout 4: aside, assets, budgeting, buildup, essential, hectare, liquidate, overcome, overuse, solution, tracking, trapping

From AWL: accurate, area, available, capacity, challenge, collapsing, economy, estimated, global, impacts, individuals, job, percentage, predictions, range, resources, significant survival, sustainability, vary

Academic Language Functions

skimming and scanning

Student Learning Tasks

Scan and skim for answers to the preview questions for the articles.

Preview focus questions for **Handout 2-40**: "Our Footprints—They're All Over the Place":

- How does the writer define "ecological footprint?"
- How many acres of productive land are needed to support the average North American lifestyle?
- What is the writer's view of the possible dangers of overusing natural resources?
- What does the writer see as the solution to the problem? (I)

Preview focus questions for **Handout 2-41**: "Humanity's Footprint":

- What is the problem in the world context?
- What are the causes of the problem?
- What are the dangers?
- What is the suggested solution?
- Do you think the reading reflects one side of the issue? Could there be another side?

Teacher Notes and References

Handout 2-40: "Our Footprints—They're All Over the Place"

Handout 2-41: "Humanity's Footprint"

Outcomes

SLO 2.2 Use several visual techniques...

SLO 3.1 Seek, organize, and synthesize information...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 2.4 Use the steps of the writing process...

SLO 3.1 Seek, organize, and synthesize information...

SLO 3.3 Quote from or refer to sources...

SLO 6.1.4 Use functional planning...

SLO 6.1.5 Use selective attention...

SLO 6.2.1 Use resourcing to access...

SLO 6.2.7 Use elaboration...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.2.13 Use recombination...

SLO 6.3.1 Use questioning for clarification...

Instructional and Learning Sequence

Comparison of Two Passages: Use a graphic organizer that allows for comparison of viewpoints. Compare the viewpoints expressed in **Handout 2-40:** "Natural Resources and Wastes," **Handout 2-40:** "Our Footprints—They're All Over the Place," and **Handout 2-41:** "Humanity's Footprint."

Language Features

Academic Language Functions

synthesizing information

Sequence 3

Writing Task

Have each student choose one of the articles: "Population and Natural Resources" or "The Scale of Our Presence." Both discuss human impact on the earth.

Have students combine the information from the graphic organizer with examples from this article to write a paragraph explaining the concept of "ecological footprint." Remind students that when referring to the idea or words from one of the articles, they must name the writer or the title of the article, as shown.

Language Features

Discourse Features

attributive tags (e.g., according to x,...; in x's view,...; x says,...)

citation format

Academic Language Functions

synthesizing

Student Learning Tasks**Assignment**

Use a graphic organizer to compare the viewpoints expressed in Handouts 2-40, 2-41, and 2-42. (C)

Assignment

Choose **Handout 2-42**: "Population and Natural Resources" or **Handout 2-43**: "The Scale of Our Presence." Combine the information from the graphic organizer with examples from this article to write a paragraph explaining the concept of "ecological footprint." (I)

Teacher Notes and References

Venn diagram (see Teaching and Learning EAL in the Senior Years section)

Handout 2-39: "Natural Resources and Wastes"

Handout 2-40: "Our Footprints—They're All Over the Place"

Handout 2-41: "Humanity's Footprint"



Handout 2-42: "Population and Natural Resources"

Handout 2-43: "The Scale of Our Presence"



If students are unfamiliar with a standard North American documentation system, such as MLA, this is an opportunity to introduce it.

Outcomes

SLO 4.1 Use language to encourage...

SLO 6.1.4 Use functional planning...

SLO 6.3.1 Use questioning for clarification...

SLO 1.2 Respond to texts with increasing independence...

SLO 6.1.8 Use self-evaluation to check...

Instructional and Learning Sequence**Sequence 4****Preparation for Recycling Lesson**

Have students interview one or two older adults (e.g., a parent or grandparent) about the items they threw out when they were young. Why did they discard the items? Where did they dispose of them? What differences do they see in today's trash?

**Language
Features****Structures**

question forms, time clauses (review)

Follow-up

If students have Internet access, they can take the Ecological Footprint Quiz. Read and discuss ways to "Take Action."

Student Learning Tasks**Assignment**

Interview one or two older adults (e.g., a parent or grandparent) about the items they threw out when they were young. Why did they discard the items? Where did they dispose of them? What differences do they see in today's trash? (1)

Take the Ecological Footprint Quiz. Read and discuss ways to "Take Action."

Teacher Notes and References

The interview will likely be in the students' first language, but they will have to report on it in English.



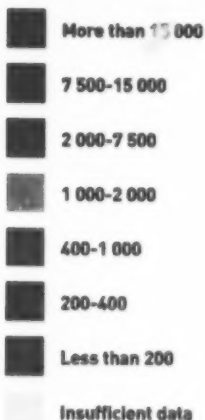
Ecological Footprint Quiz at:
<www.earthday.net/footprint/index.asp>



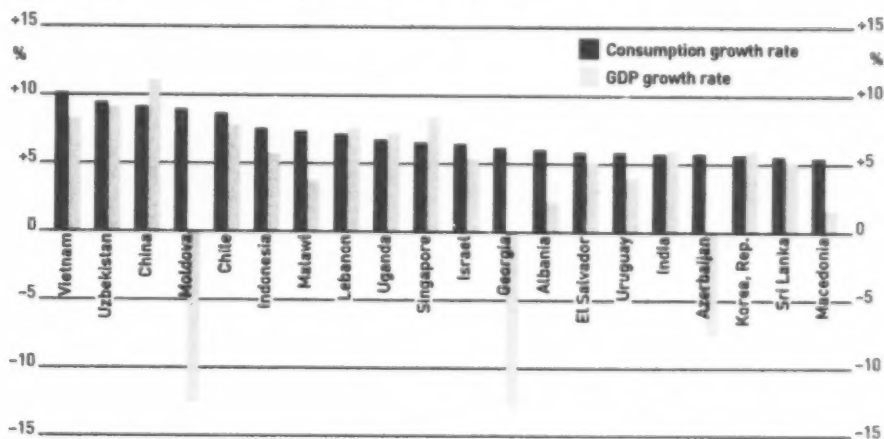
Further information about the human impact on water, biodiversity, forests, energy, and equity and the environment can be found at the Earthday website.



Consumption Charts

PRIVATE PER-CAPITA CONSUMPTION, 1998
 Expressed as US\$


Private consumption, measured by the World Bank, is the value of all goods and services, including durable products, purchased or received by households as income in kind.

CONSUMPTION GROWTH RATES AND GDP, 1990-98
 The highest consumption growth rates


Source: World Bank.

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Natural Resources and Wastes

OVERVIEW Natural resources and wastes

Natural resources and wastes

POPULATION, consumption and technology impact on the environment by way of two major types of human activity. First, we use resources. We occupy or pre-empt the use of space, and so modify or remove entirely the habitats of many wild species. We extract resources – growing food, catching fish, mining minerals, pumping groundwater or oil. This affects the stock of resources available for humans and for other species in the future.

Resources fall into two main categories. Renewable resources like water or fish are replenished naturally. Non-renewable resources like oil or iron ore have a limited stock that is not replenished, except on geological timescales of millions of years.

Second, we dump wastes – not just those that consumers throw away, but all the waste solids, liquids and gases that are generated from raw material to final product. These affect the state of land, groundwater, rivers, oceans, atmosphere and climate.

Resources have traditionally been the main focus of concern about the impact of population and consumption on the environment. Frequent warnings were issued that we faced massive famines, or that we would “run out” of essential fuels and minerals. More recently it has become apparent that more serious, more immediate and more intractable problems lie in the global threats that derive from our wastes.

NON-RENEWABLE RESOURCES

Ultimately, all non-renewable resources on Earth are limited: if used constantly they must sooner or later run out. So far, however, the threatened exhaustion of non-renewable resources has not happened, thanks to market mechanisms which have ensured successful adaptation.

When shortages of any mineral resource begin to be felt, prices rise. This stimulates more exploration and research, and makes it economical to develop more expensive technology, and to exploit reserves that are more costly to work. Manufacturers find ways of making do with less, recycling increases, and cheaper substitutes are found.

Due to these mechanisms, the projected lifespan of many minerals has remained more or less level or in some cases grown with time, despite dramatic increases in use. In 1989, for example, recoverable reserves of oil and natural gas liquids were enough to cover 41 years of production at current rates. Nine years later they were enough to cover 43 years. Recoverable reserves of natural gas were enough to cover only 23 years of production in 1989; by 1998 this had grown to 57 years. Recoverable reserves of coal did fall, but were still sufficient for more than two centuries of production¹.

Prices are a good indication of impending shortage, and the prices of minerals have declined in real terms over the past four decades. In constant prices, between 1980 and 1996 the price of metals and minerals fell by an average 41 percent, while that of oil fell by 65 percent².

Of course, this conjuring trick cannot go on forever. But in modern times the human race has not run into shortages of any key non-renewable resource that has actually constrained the end use to which that resource was put. The mechanism of adaptation, based on free markets, resourceful

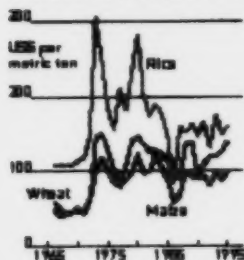
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Natural Resources and Wastes (continued)

OVERVIEW Natural resources and wastes

CEREAL PRICES



Source: FAO

Despite shrinking amounts of land per person and continuing soil erosion, food availability has improved in most parts of the world and cereal prices have not risen.

companies, continual research and canny consumers, has worked very well in this sphere, and there is no strong reason to believe it will not continue to do so.

This is not to say that our use of non-renewable resources is problem-free, but the major difficulties arise from the wastes created in producing and consuming these resources. Extracting and processing fossil fuels and other mineral resources on an increasing scale produces water and air pollution as well as solid wastes.

RENEWABLE RESOURCES

Renewable resources like freshwater, soil or wild fish stocks are much more problematic than non-renewable resources, because most of them are vulnerable to human overuse or pollution.

By definition, renewable resources are replenishable by nature – yet replenishment is not guaranteed. Renewal occurs only if they are given the chance to renew. If we exploit them faster than they can renew themselves, they deplete or degrade. The majority of renewable resources, including the most basic ones needed for human survival – land, food and water – are now affected by human overexploitation or pollution.

Food and land

The oldest question about human population and the environment was posed by Malthus. Can agricultural production keep up with potential human population growth? Malthus' answer was no: agricultural production can only increase arithmetically ($3+3+3=9$) whereas population can increase geometrically ($3 \times 3 \times 3 = 27$).

It followed, Malthus argued, that the human population would always be kept in check by the food supply. In reality, the reverse has usually been the case: market mechanisms have worked to expand the food supply in line with demand, and this expansion has more than matched the growth of the human population.

Land availability

Malthus' basic outlook still dominates the popular view, and some recent trends provide material for renewed concern.

In most parts of the world, cultivated land has not been expanding in line with population growth, so the amount of farmland per person has been declining. The area per person has declined only slowly in developed countries, from 0.65 hectares in 1965 to 0.51 hectares 30 years later. In developing countries, where population growth is faster, the area per person fell from 0.3 to 0.19 hectares over this same period¹.

The steepest fall was in Africa, where the extension of the farmed area has lagged far behind population growth. In 1965, Africa had half a hectare of cultivated land per person, but this dropped dramatically to a mere 0.28 hectares in 1995. If expansion continues at the same rate as it did between 1965 and 1995, and the UN's medium population projection is realized, then by the year 2040 Africa will have only 0.15 hectares of farmland per person. This is less than Asia had in 1995, and Asia has fewer problem soils and climates, and far more potential for irrigation. Many parts of Central, Southern-Central and West Africa still have abundant land, but much of this is subject to severe soil, climate or disease constraints. It seems likely that many African countries will run into serious land shortages².

Food availability

Overall, cereal production has not been keeping pace with population growth for the past decade and a half. The amount of grain available per person rose fairly steadily from 135 kilos in 1961 to 160 kilos in 1992, but since then has averaged about 157 kilos³.

We must be cautious before concluding that we are seeing the harbingers of a coming global food crisis. If these developments were really reducing the ability of farmers to meet market demand then we would expect to see rising food prices and declining food intakes.

(continued)

Natural Resources and Wastes (continued)

OVERVIEW Natural resources and wastes

Yet neither of these things is happening. On the contrary, allowing for inflation, the prices of most cereals have been on a falling, not a rising, trend. In constant 1990 US dollars, the prices of wheat and maize in 1996 were 40 percent lower than in 1980 and 50 percent lower than in 1960¹.

Nor was there any overall decline in average food intakes per person. Average daily calorie intake in 1998 was 2,790 calories², the highest on record, following fairly steady growth from 2,295 in 1963. Average daily protein intake was 74.9 grams, again the highest on record, up from 63 grams in 1961³.

Improvements were notched up in all developing areas, most rapidly in Asia, but also in Africa, even though average calorie and protein intakes remained low.

How can we explain the simultaneous drop in cereal production per person and the rise in dietary intakes? The simple answer is that people do not live by bread alone: calorie intakes from cereals have been more or less static since 1984⁴. The increase has come rather from meat and fish, oils and other vegetable products. Global meat intake per person grew steadily from 24 kilos per person in 1963 to 37 kilos in 1998⁵.

Within the cereal sector it is likely that cereals are being used more efficiently at every stage, with lower losses in storage and processing between harvest and table. Cereals used for livestock feed are increasingly being replaced by soybeans, and soybean production has been growing rapidly⁶.

The continued improvement is a sign that markets are by and large matching production with effective demand. People are also adapting their diets as a result of health and environmental concerns. For example, all the 1963-98 increase in meat consumption per person came from pork (up 71 percent) and poultry (up 237 percent). It takes considerably less cereal and land to produce a kilo of chicken or pork than a kilo of beef⁷.

Moreover, people's need for dietary energy is, on average, declining. Farming has the highest calorie requirements, followed in turn by heavy industry, light industry, services, and then non-employment. The general trend in all societies is to have higher and higher percentages of people represented in sectors with lower food energy needs.

Barring severe climatic change, it is very unlikely that we face catastrophic food shortages at global level. Research has shown that with relatively modest improvement in regionally specific agricultural practices, the world could feed 10 billion people with current land and technology levels⁸.

Persistent problems

The agricultural sector has been very successful in raising food production since 1945 to meet growing populations and consumption levels, but this has often been at the cost of exporting problems to other ecosystems. High levels of fertilizer application have caused water pollution and eutrophication. The expansion of farmland has been to the detriment of wildlife habitat and biodiversity, which has been further harmed by pesticide use.

Population growth is directly implicated in all of these trends. For example, the area of land needed for any given crop is the product of population, multiplied by consumption per person, multiplied by the area needed to produce each unit of consumption. This latter element is the result of farming technology. Where this has been able to increase yield faster than the growth in population multiplied by consumption, the area needed for farming has fallen over time. But where yield has not kept pace, the area of farms and pastures has increased at the expense of forests and other wild habitats.

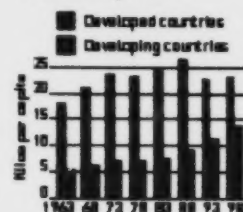
Unsustainable soil and water management practices have caused land degradation. A major assessment found that by 1990 soils had degraded on 38 percent of the world's cropland, 21 percent of pasture and 18 percent of forests⁹. Productivity has declined significantly on 16 percent of agricultural land in developing countries¹⁰. One recent estimate suggested that cropland productivity is 12.7 percent lower than it would have been without human-induced soil degradation¹¹.

Serious problems of food production will also continue in localized areas and in individual countries. These include many countries in sub-Saharan Africa and some individual countries outside Africa such as Bolivia, Haiti and Afghanistan. Many countries that cannot produce enough food

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THE CLOSING GAP

Fish and seafood consumption



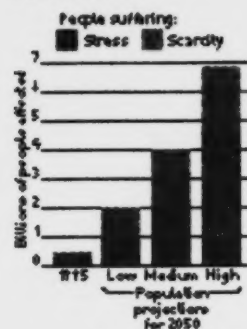
Meat consumption



Source: FAO.

Natural Resources and Wastes (continued)

OVERVIEW Natural resources and wastes

FRESHWATER
SCARCITY

Source: Population Action International.

The number of people in countries facing freshwater shortages, around 436 million in 1995, is set to rise steeply over the next half century, but will vary enormously depending on the rate of population growth.

for their own needs can pay for food imports by exporting manufactured goods or services. But many marginal areas, and many poor food-deficit or landlocked countries, especially in Africa, are badly placed to develop competitive industries or services.

There are millions of people who do not get enough food for a healthy, active and productive life. The estimated incidence of malnutrition in developing countries has halved from 35 percent of the population in 1969-71 to 17 percent in 1995-97, but because of the growth in population the absolute drop in numbers, from 917 million to 790 million, has been much more modest¹⁷.

The numbers of malnourished will probably continue to decline slowly, while still remaining unacceptably high. However, malnutrition is not a sign that not enough food is available at global or even national level. It is a symptom of poverty and inequality – the poor lack enough money to buy, or enough good land to grow, sufficient food for the needs of their families.

Reducing the number of malnourished means taking measures to create jobs, redistribute land more equitably, and increase the productivity of small and marginal farms through targeted agricultural training, crop breeding, and soil and water conservation programs. Once the poor's own resources have been boosted, they themselves will grow, or the world market will produce, enough food to meet their effective demand.

Freshwater

We live on a planet whose surface is mainly ocean, but freshwater is a much more limited resource. Some 97 percent of all water is salty, currently useless for drinking or agriculture.

Most freshwater is locked up in ice and snow and in aquifers too deep to tap, and the rest is very unevenly distributed. Equatorial regions and some northern latitudes have a surfeit. Dry areas in between, including much of Africa, have supplies that are too scarce or too uncertain.

Freshwater is crucial for survival, for health, for agriculture, for industry, and for comfort and leisure. But the freshwater resources of any country are limited. There is only so much to go round: the larger the population, the less there is for each person.

In some countries, shortages are already biting. According to Swedish hydrologist Matin Falkenmark, a minimum of 1,700 cubic metres of renewable freshwater is needed per person per year to avoid serious problems. Below this level, a country is in a situation of water stress, when water supply problems may become chronic and widespread. There may be a need for long-distance water transfers, reuse of treated waste water, or supply interruptions in dry periods.

Where supplies fall below 1 000 cubic meters per person per year, a situation of water scarcity applies, and a society will face difficult choices between agriculture, industry, personal health and convenience which will hamper development¹⁸.

In 1995 some 436 million people were already suffering water scarcity or stress. Even these levels of water shortage are causing severe development problems in some areas. There are conflicts among farmers and between farming and urban needs, and heightening tensions between countries dependent on the same resources, such as Israel and Jordan; Turkey, Syria and Iraq; India and Bangladesh; Sudan and Egypt¹⁹. Saudi Arabia, Israel and the whole of North Africa from Egypt to Mauritania are already withdrawing groundwater faster than it can replenish itself. Yet these countries face population increases of between 52 and 152 percent over the next 50 years²⁰.

Different population futures make a considerable difference to water futures. An analysis of the UN's 1996 population projections has estimated numbers likely to be suffering water shortage in the future. By 2050, on the medium projection, the number of people in countries suffering water stress or scarcity will have risen to 4 billion²¹. If the UN's low population projection could be achieved, then the total population in countries facing water scarcity or stress would amount to only 2 billion. By contrast, if the world were to hit the high projection, this total would be 6.8 billion.

POLLUTION AND WASTES

Perhaps the most intractable threats to the globe today relate as much to what we waste as to what we consume. Pollution places a mounting burden on local and planetary ecosystems. Ultimately it is

(continued)

Natural Resources and Wastes (continued)

OVERVIEW Natural resources and wastes

exported to the global commons: the oceans and atmosphere, where our understanding of interactions is still inadequate. Sustainable management strategies are complex to devise and politically difficult to introduce.

In the process of making the end products we actually use, our machines dig up, churn over, swallow up and spew out gigatons of material. One study found that some 93 percent of materials used in production do not end up in saleable products but in waste, while 80 percent of products are discarded after a single use²⁷.

The result is a veritable avalanche of materials. In 1995, for example, the world produced 1.42 billion tons of cement – about a quarter of a ton for every man, woman and child on Earth. Some 2.57 billion tons of sand and gravel were produced in the 52 countries for which data are available²⁸.

Figures on carbon dioxide (CO₂) illustrate how the waste deluge has grown. Back in 1750, the human race produced only 11 million tons of CO₂ from fossil-fuel burning and cement production. A century later this had grown 18-fold to 198 million tons, and in another century a further 30-fold to around 6 billion tons. By 1995 our annual CO₂ output had multiplied by another four times to reach almost 24 billion tons²⁹.

These material flows have left deepening scars on the planet. The solid wastes that are not incinerated deface or pollute localized areas and water courses. Liquid and gaseous pollutants are more insidious and spread invisibly across the whole globe.

Humans raised the level of CO₂ in the air from 280 parts per million in pre-industrial times to 363 parts per million in 1996. Over this same period we raised methane concentrations by 145 percent. There were no gaseous chlorines in the atmosphere before industrial times. By 1996 there were 2,731 parts per trillion, most of these produced in the 20th century³⁰.

Significant traces of organic and metallic pollutants are now found in the deepest marine sediments, in the remotest glaciers and icecaps, and in the fat of arctic mammals. Studies of human breast milk have found traces of more than 350 contaminants, including 87 dioxin and dioxin-like compounds and 190 volatile compounds³¹.

The rise of pollution and waste is not inexorable. Water and air pollution usually increase in the early stages of economic development, but once a certain income threshold has passed, people tend to value environmental quality more highly and have the resources to pay for protection measures. In most developed countries there have been significant reductions in emissions of lead, sulfur dioxide (SO₂) and particulates (smoke), and widespread improvements in water quality in rivers and around beaches. These are cases of immediate hazard, or easily noticeable local problems, or substances that have been the subject of intense media publicity, where political pressure for change is strong³².

But even in rich countries waste emissions with less immediate, less visible or less dramatic effects have not been the subject of effective controls. The same is true where the costs are exported over a vast area or over the whole globe, or where remedial action would be costly and might affect powerful business interests or important groups of voters. These include, for example, emissions of the greenhouse gases CO₂ and methane.

Population is always a factor in waste and pollution, along with consumption and technology. The level of production of wastes or pollutants is the product of the number of people, the amount each person consumes, and the amount of waste created for each unit of consumption in the whole process from production and packaging to the consumer and his or her dustbin or sewage outlet.

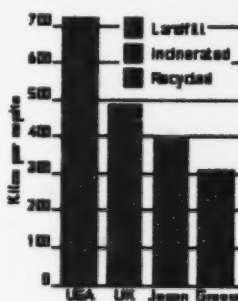
Several efforts have been made to identify the relative shares of responsibility for rising pollution. Environmentalist Barry Commoner studied examples from the United States between 1946 and 1968. Population growth accounted for only 14 to 18 percent of the increase in synthetic organic pesticides, in nitrogen oxides and in tetraethyl lead from vehicles. It was responsible for only 7 percent of the increase in non-returnable beer bottles and a mere 3 percent of the increase in phosphorus from detergents. In almost every case, technology was the dominant factor. A later study by Commoner of nitrates, cars and electricity in 65 developing countries came to similar conclusions³³.

(continued)

Waste

In the mid-1990s the rich countries belonging to the Organisation for Economic Co-operation and Development produced 1.5 billion tons of industrial waste and 579 million tons of municipal waste – an annual total of almost 2 tons of waste for every person. The United States alone produced 214 million tons of hazardous waste – almost half a kilo for every dollar of GDP³⁴.

MUNICIPAL WASTE PRODUCTION AND DISPOSAL, MID-1990s



Source: OECD.

In developed countries each person produces five to ten times their body weight in municipal waste per year. There are huge variations: the average Japanese produces 45 percent less waste than the average American. Industrial, mining and construction wastes are many times greater than municipal. The shares going to recycling, incineration or landfill also vary widely.

Natural Resources and Wastes (continued)

OVERVIEW **Natural resources and wastes**

Clearly, technology is always implicated, and in many cases it may be the prime culprit. However, Commoner chose only cases where technological change was rapid. There are other cases where population or consumption are dominant, such as increased methane emissions from livestock or paddy fields. In more and more cases, technological change is a downward pressure, working to reduce our output of wastes, while growth in population and consumption continues to gear it upwards.

Studies of changes in air pollutants (SO_2 , nitrogen oxides, smoke and CO_2) in countries of the Organisation for Economic Co-operation and Development (OECD) between 1970 and 1988 showed technology as a downward pressure in all four cases – mainly through increased energy efficiency in the case of CO_2 and nitrogen oxides, and through cleaner technology in the case of SO_2 and smoke. Population growth was responsible for a quarter of the upward pressure on emissions, while consumption was responsible for three quarters³⁰.

Our Footprints—They're All Over the Place

By David Schaller

The word "footprint" offers us many richly symbolic images: Neil Armstrong's "one small step"; Crusoe's Friday; the fog that comes "on little cat feet"; the Olduvai tracks of "Lucy;" and yes, even the caution expressed by my elementary school teacher to stay away from "Big Feet"—the junior high kids on the playground who loved to torment first and second graders.

Let's now look at another dimension of footprint, one equally symbolic and full of meaning to those concerned about environmental protection. If asked who had the bigger "footprint"—an adult female living somewhere in the developing world or your average eight-year-old American child—most of us would select the adult female. Now, insert the word "ecological" in front of "footprint" and repeat the question. The answer—in a moment.

The concept of an "ecological footprint" is an almost intuitive measure of the impact of individuals or societies on nature. It provides a simple yet elegant accounting tool that can help us see the impact of human consumption patterns on the earth. What we do about this information, of course, is the essence of a much larger policy debate.

As we live out our lives, we consume resources and we discard wastes. Each bit of consumption and generation of waste demands a certain amount of productive land and water. The amount of productive land and water needed to support the production of resources we consume and absorb the wastes we create can be considered as our Ecological Footprint. Individuals, households, cities, regions, nations—all can be measured as to their Ecological Footprint.

In their compelling book, *Our Ecological Footprint*, William Rees and Mathis Wackernagel lay out the approach and apply the methodology that is changing the way we look at broad issues of sustainability, ecological carrying capacity, environmental protection, and even social justice. Here, in a nutshell, is the essence of Ecological Footprint analysis applied to the world in which we currently live.

The ecologically productive land of the world currently totals some 3.6 acres for each of the 5.95 billion people now living. The average North American lifestyle currently requires almost 10 acres of ecologically productive lands to supply its resources and absorb its wastes. This tells us immediately that the ecological demands of average citizens in rich countries exceed per capita supply by a factor of three. Someone, lots of someones, somewhere are going without.

Said another way, if everyone currently alive were to consume resources and generate wastes at the pace of the average citizen in the United States (or Canada, or Western Europe, or Japan) we would need three planets in order to live "sustainably." For the projected global population of nearly 10 billion people in the year 2040 to enjoy the North American lifestyle of today, *a total of six planet Earths* would

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Our Footprints—They're All Over the Place (continued)

be needed. Neither scenario seems likely. These projections assume that there will be no improvements in either resource use efficiency or waste elimination techniques. However, we know that improvements in both are happening. The big question is whether they are happening fast enough!

It is, of course, in the inefficiency of resource production that wastes are created and our "environmental" problems manifested. But if we are not looking hard at how and where our "footprint" is being placed, we are missing the chance to do something about those inefficiencies. In looking at the resource consumption and waste generation practices of the average North American, it becomes clear that via trade and technology we have appropriated the ecological capacity of large areas outside our own national boundaries. We have, in fact, exported much of our "footprint." In their book, Rees and Wackernagel take us through the number crunching and data sources used to calculate footprints for our cities, our nations, and us. If anything, they significantly understate the resource demands needed to support consumption patterns and waste disposal practices.

The challenge posed to all of us is to find the means, and quickly, to reverse the "overshoot" condition we are already in with respect to human impact on the planet. Some would prefer to start with that hypothetical adult female in the developing world whose fertility promises/threatens to add billions more footprints to the earth's surface in the coming decades. The accounting tool of Ecological Footprints suggests, however, that the place to begin is with the resource consuming, waste generating "average" inhabitant of North America, western Europe, and Japan. The answer to the question posed earlier? It is the eight-year-old child (not to mention his parents, neighbours...) who now has the "Big Feet."

Humanity's Footprint

Today, humanity's Ecological Footprint is already over 30 percent larger than what the world can offer. This means we are overusing the planet and liquidating its ecological assets. Examples of our overuse include deforestation, collapsing fisheries, and the buildup of heat-trapping carbon in the atmosphere. At the same time, a significant percentage of the world's people do not have enough resources to meet basic survival needs.

To overcome this sustainability challenge, we need to do a better job of budgeting our planet's limited resources. Nature provides an average of 2.1 hectares (5.3 acres) of biologically productive space for every person in the world. By 2050 that available space will be reduced to 1.4 hectares (3.5 acres) per person if predictions of global population are accurate. Also, some of this area must be set aside for the estimated 10 million other species on the planet.

On average, people use 2.8 hectares (6.9 acres), but there is a wide range. In some countries, the average is as low as 0.5 hectares (1.2 acres), while others use as much as 13 hectares (32 acres) per person. Even within any given country, individuals' footprints vary widely.

By more carefully tracking human impacts on the Earth's resources, we can learn what needs to be done in order to protect our natural assets. We can all be part of the solution. Together, we can reshape the global economy in a way that will allow all people to meet their essential needs without destroying the limited capacity of our planet.



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Population and Natural Resources

POPULATION AND NATURAL RESOURCES Introduction

Population and natural resources

WHILE many of the environmental impacts of humankind closely map demographic indicators, this leaves out one vital component: consumption. The per-capita consumption of key natural resources varies hugely around the world. Typically, but not universally, the citizens of rich industrialized nations use more of the world's resources and produce more waste. Sometimes they thereby deplete their own environments; sometimes other people's.

For many resources, the United States of America is the world's largest consumer in absolute terms. For a list of 20 major traded commodities, it takes the greatest share of 11 of them: corn, coffee, copper, lead, zinc, tin, aluminum, rubber, oil seeds, oil and natural gas. For many more it is the largest per-capita consumer.

A typical example is meat. China, with the world's largest population, is the highest overall producer and consumer of meat, but the highest per-capita consumption in the world is that of the United States. The average United States citizen consumes more than three times the global average of 37 kilos per person per year. Africans consume less than half the global average, and South Asians consume the least, at under 6 kilos per person per year¹.

Other resources are used much more variably, depending on local circumstances. Fish, for instance, has been a cheap source of protein for hundreds of millions of poor people wherever it has been available. The highest consumption levels are in some of the world's poorest states, such as the Maldives or Kiribati, where fish is plentiful. Per-capita consumption is also very high in rich nations with well-established fishing traditions – 91 and 66 kilos per capita in Iceland and Japan respectively; way above the global average of 16 kilos per capita per year².

Some consumption patterns reflect the rate of industrial, urban and infrastructure development rather than simply current wealth. Cement, for instance, has in recent years been used in greatest quantities in the rapidly growing Asian economies. The top three places for per-capita use in 1996 were occupied by the Republic of Korea, Taiwan and Malaysia. Each used more than twice as much cement per capita as the United States and four times as much as a typical established industrial nation with well-developed infrastructure, such as the United Kingdom³.

Water is also heavily used in a number of developing countries. It is a key strategic resource whose location is largely fixed, like land, but for which many countries rely on their neighbors. Egypt, for instance, relies for 97 percent of its water on flows that originate outside the country, mostly upstream on the Nile. Sudan, also on the Nile, is in a similarly vulnerable position, as are the Netherlands at the mouth of the Rhine, Cambodia on the Mekong, and Syria and Iraq on the Euphrates. All rely on foreign sources for the bulk of their water⁴.

Water use is often as high or higher in poor, arid countries as in rich nations. When precipitation is lowest, demand for crop irrigation is typically highest, and where water-hungry cash crops are grown as well as food, the demands are higher still. When the country is in a poor state of

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Population and Natural Resources (continued)

POPULATION AND NATURAL RESOURCES Introduction

development, with dilapidated infrastructure, then water use can be immensely inefficient, producing the highest water use of all, as illustrated by the rates in the arid, cotton-growing central Asian states of the former Soviet Union. During the 1990s Turkmenistan withdrew more than 5,000 cubic meters per person per year, with Uzbekistan, Kyrgyzstan, Kazakhstan, Tajikistan and Azerbaijan all withdrawing 2,000 cubic meters or more per person per year. By comparison, per-capita withdrawals in the United States were around 1,800 cubic meters, in France 650 and in the United Kingdom 200¹.

But for some resources, consumption depends upon the end use to which that resource is put, as typified by wood. While rich nations use more of it in the form of paper and packaging, poor predominantly rural nations rely on wood to a greater extent for construction and particularly for fuel. Finland, which produces large quantities of paper, is the greatest per-capita user of raw timber, but African and Asian countries are the largest users of fuelwood. Japan, though widely criticized for its harvesting of tropical timbers from Southeast Asian rainforests, lies well down the global list of timber consumers.

Two trends are causing nations, corporations and individuals to reassess their use of natural resources. Since the 1970s, there has been an increasing realization that many resources, notably metals and fossil fuels, will one day run out. And since the 1980s in particular, there has been growing concern about the environmental downside of their profligate exploitation, largely with respect to pollution and the degradation and conversion of land.

Some stories of inefficiency and extravagance have become notorious. It takes the mining of 6 tons of rock to produce a pair of typical gold rings. Only 2 to 3 percent of the energy produced by burning coal in a power station is eventually used to light a bulb or boil a kettle, because of inefficiencies at every stage of its conversion to electricity, its transmission and ultimate use. The average European uses 130 kilos of paper a year – the equivalent of two trees. The average American uses more than twice as much – a staggering 330 kilos a year. The paper and board industry is the United States' third largest source of pollution, while its products make up 38 percent of municipal waste².

Both governments and companies are now increasingly adopting strategies to reduce their environmental "footprint" on the world. They are doing this by reducing the amount of materials and energy used in providing their services (whether a car or a kilowatt of energy, a meal or a megabyte of information), and by reusing and recycling materials where possible. Much has been done. The gasoline consumption of the average automobile in the United States has halved since the 1970s. During the same period most European homes have been insulated to reduce heat loss by 50 percent or more. Some commercial farmers, particularly in the United States, have doubled the crops they grow with a given amount of irrigation water by using sub-surface drip irrigation.

Much more could be done at no extra cost. Modern technologies – plastic and carbon fibre, optical fibres, e-mail, drip irrigation, electronic systems controls – can all aid the process by making manufacture and communications more efficient and by substituting abundant materials for scarce ones.

Organized recycling, while not invariably energy-efficient, can also be beneficial. Growing concern at the damage to natural forests from paper production has led to a surge in paper recycling. Globally, 43 percent of paper fibre is recycled, a figure that rises to 46 percent in the United States and to 72 percent in Germany³. In Britain the film processing industry reuses 5 million film cassettes a year, retailers reuse 40 million clothes hangers, and the aluminum industry recycles some 2 billion cans a year. The latter saves sufficient electricity, which would otherwise go to smelting new aluminum, to power all the nation's television sets for a one-hour show every night of the year.

The Scale of Our Presence

OVERVIEW **The scale of our presence**

The scale of our presence

HUMANS are perhaps the most successful species in the history of life on Earth. From a few thousand individuals some 200,000 years ago, we passed 1 billion around 1800 and 6 billion in 1999. Our levels of consumption and the scope of our technologies have grown in parallel with, and in some ways outpaced, our numbers.

But our success is showing signs of overreaching itself, of threatening the key resources on which we depend. Today our impact on the planet has reached a truly massive scale. In many fields our ecological "footprint" outweighs the impact of all other living species combined.

We have transformed approximately half the land on Earth for our own uses – around 11 percent each for farming and forestry, and 26 percent for pasture, with at least another 2 to 3 percent for housing, industry, services and transport¹. The area used for growing crops has increased by almost six times since 1700, mainly at the expense of forest and woodland².

Of the easily accessible freshwater we already use more than half. We have regulated the flow of around two thirds of all rivers on Earth, creating artificial lakes and altering the ecology of existing lakes and estuaries³.

The oceans make up seven tenths of the planet's surface, and we use only an estimated 8 percent of their total primary productivity. Yet we have fished up to the limits or beyond of two thirds of marine fisheries and altered the ecology of a vast range of marine species. During this century we have destroyed perhaps half of all coastal mangrove forests and irrevocably degraded 10 percent of coral reefs.

Through fossil-fuel burning and fertilizer application we have altered the natural cycles of carbon and nitrogen. The amount of nitrogen entering the cycle has more than doubled over the last century, and we now contribute 50 percent more to the nitrogen cycle than all natural sources combined. The excess is leading to the impoverishment of forest soils and forest death, and at sea to the development of toxic algal blooms and expanding "dead" zones devoid of oxygen⁴.

By burning fossil fuels in which carbon was locked up hundreds of millions of years ago, we have increased the carbon dioxide content of the atmosphere by 30 percent over pre-industrial levels. We have boosted methane content by 145 percent over natural levels⁵.

Through mining and processing we are releasing toxic metals into the biosphere that would otherwise have remained safely locked in stone. We are producing new synthetic chemicals, many of which may have as yet undetermined effects on other organisms.

We have thinned the ozone layer that protects life on Earth from harmful ultra-violet radiation. Most scientists agree that human activities are contributing to global warming, raising global temperatures and sea levels.

These processes affect the habitats and environmental pressures under which all species exist. As a result, we have had an incalculable effect on the Earth's biodiversity. The 484 animal and 654 plant species recorded as extinct since 1600 are only the tip of a massive iceberg⁶.

We have become a major force of evolution, not just for the "new" species we breed and genetically engineer, but for the thousands of species whose habitats we modify, consigning many to

(continued)

The Scale of Our Presence (continued)

OVERVIEW The scale of our presence

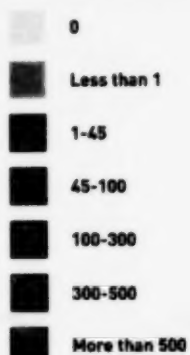


Source: CIA.

The scale of human activities

The scale of human activities can be represented partly by observing population density, both over the globe and over time.

POPULATION DENSITY, 1998 Per square kilometre



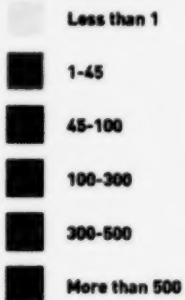
Note: At the end of the 20th century the world average population density was 45 people per square kilometre.

(continued)

The Scale of Our Presence (continued)

OVERVIEW **The scale of our presence**

Population density per
square kilometre



Source: RVM.



(continued)

The Scale of Our Presence (continued)

OVERVIEW **The scale of our presence**

extinction; compelling others to evolve and adapt to our pressures. We have become a force of nature comparable to volcanoes or to cyclical variations in the Earth's orbit.

The scale of our activities depends on our population numbers, our consumption and the resource or pollution impact of our technologies – and all three of these factors are still on the increase. The maps on the previous pages illustrate the increasing spread and density of the human population over the last three centuries.

As we enter the third millennium, the destiny of the planet is in our hands as never before, yet they are inexperienced hands. We are modifying ecosystems and global systems faster than we can understand the changes and prepare responses to them. All the factors in this vast equation affect each other constantly. In a globalized world the elements of human activity interact with each other and with local and planetary environments.

In this unprecedented situation, the need to be fully aware of what we are doing has never been greater. We need to understand the way in which population, consumption and technology create their impact, to review that impact across the most critical fields, and to find ways of using our understanding of the links to inform policy.



Topic 8 Recycling

(1–2 lessons)

This lesson requires students to report conversations; classify; interpret a cartoon; view a video and listen for specific terms; read a brochure and extract information (timed); create a concept map or web; respond to and summarize relevant listening selections; compare attitudes toward waste

management; express predictions; and write different types of short paragraphs. Possible vocabulary includes words from the Academic Word List and everyday items.

Outcomes

SLO 2.3.1 Use the structures and language features...

SLO 4.7 Use the English language to participate in community...

SLO 5.1 Identify common themes and symbols...

SLO 5.4 Show understanding of the effect of cultural background...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.2.7 Use elaboration...

SLO 6.2.9 Use summarization...

SLO 2.2 Use several visual techniques...

SLO 5.1 Identify common themes and symbols...

SLO 6.2.3 Use grouping of items to classify...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

Instructional and Learning Sequence**Sequence 1****Activation**

Discuss the results of students' informal survey of older adults about the items they threw out when they were young. Why did they discard the items? Where did they dispose of them? Would some of the things they discarded before be handled differently today?

Ask students to write a brief summary of the findings in their journal. Compare the past and present, using appropriate verb tenses and time indicators.

Language Features**Vocabulary**

consume, discard, contaminate, reduce, reuse, recycle, dump, waste, litter, landfill, green (environmentally friendly), renewable, non-renewable, feasible, manage, three Rs

Structures

verb tense review
time clauses and adverbs

Discourse Features

phrases for reporting conversation

Discuss the meaning of the three Rs: Reduce, Reuse, and Recycle.

Have students do a Word Sort: Label three columns with the terms "reduce," "reuse," and "recycle." Dictate a series of everyday products and have students dispose of them by writing them in the column that is most environmentally friendly and most feasible. Share results.

Language Features**Vocabulary**

names for everyday products (students may have surprising gaps in this area)

Academic Language Functions

classification

Student Learning Tasks

Discuss the results of the informal survey. (C)

Write a brief summary of the findings in their journal. Compare the past and present, using appropriate verb tenses and time indicators. (I)

Do a Word Sort using the terms "reduce," "reuse," and "recycle." Share your results. (I) (C)

Teacher Notes and References

While environmental stewardship is a major theme in Manitoba schools, EAL students may have had quite different experiences in their home cultures. The discussion in this lesson, beginning with the results of the surveys, may be very wide-ranging, especially with students from emerging economies.



Visual of the recycling triangle (teacher-provided)

Outcomes

SLO 1.5 Examine and interpret various visual media...

SLO 1.6 Interpret a range of texts...

SLO 5.4 Show understanding of the effect of cultural background...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 1.5 Examine and interpret various visual media...

SLO 1.6 Interpret a range of texts...

SLO 5.3 Analyze ways in which language and text affect... contemporary culture.

SLO 6.1.1 Use advanced organization...

SLO 6.1.3 Use directed attention...

SLO 6.1.4 Use functional planning...

SLO 6.1.5 Use selective attention...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.12 Use inferencing to guess the meanings...

Instructional and Learning Sequence

Examine the cartoon related to consumption for topic and situation.

- What is an environmentally safe product?
- What idea does this cartoon communicate?
- Who is the likely audience?
- What is the purpose?

Discuss as a class.

Sequence 2

View a video on recycling. Pre-select 7 to 10 important terms and list them out of order in a chart. As students watch the video have them number the terms in the order that they hear them. Then students guess the definition of each word, or use a dictionary.

Watch the video a second time and complete the chart by adding the phrase or sentence where the words were found. Discuss the audience and purpose of the video in light of the language used.

Language Features**Vocabulary**

selected from the video

Student Learning Tasks

Analyze **Handout 2-44: "Consumption Cartoon"** for the following:

- What is an environmentally safe product?
- What idea does this cartoon communicate?
- Who is the likely audience?
- What is the purpose? (I) (C)

View a video on recycling and, on **Handout 2-45: "Video Listening Guide,"** number the words in the order you hear them.

Guess the definition of each word or use a dictionary.

Watch the video a second time and complete the chart by adding the phrase or sentence where the words were found. (I)

Discuss the audience and purpose of the video in light of the language used. (C)

Teacher Notes and References

Handout 2-44: "Consumption Cartoon"



Another cartoon related to consumption may be substituted.



Video: Any short video on recycling (teacher-provided)

Handout 2-45: "Video Listening Guide"

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 1.4 Show an awareness of organizational patterns...

SLO 1.6 Interpret a range of texts...

SLO 3.1 Seek, organize, and synthesize information...

SLO 5.1 Identify common themes and symbols...

SLO 6.1.1 Use advanced organization...

SLO 6.1.2 Use organizational planning...

SLO 6.1.3 Use directed attention...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence**Sequence 3****Timed Reading (Scanning)**

Introduce the brochures. Give one set of brochures to each group of students. If students are unfamiliar with the format, point out the flow of information. Have students identify source (MPSC), intended audience, purpose, and form.

Give students a list of specific questions about facts found in the brochures and a short period of time (several minutes) to find as many answers as possible. Have students use the Jigsaw technique and divide the brochures among group members.

As a class, discuss the differences between the situation in Manitoba and in students' home countries.

Language Features**Vocabulary**

brochure, stewardship (note -ship suffix), metric tonne, trash, disposable, alternative, hazardous, swap, leftover, flammable, caustic, toxic, bulk, municipal, aluminum, scrap iron, pedestrian, litter, sponsor, anti-litter, abatement

Discourse Features

note the genre of a brochure
phrases for comparison and contrast

Student Learning Tasks**Assignment**

- a) In small groups, use the Jigsaw technique to scan **Handout 2-46: "Recycling Facts"** for answers to specific questions within the time given. (6)
- b) Discuss the differences between the situation in Manitoba and in students' home countries. (6)

Teacher Notes and References

Handout 2-46: "Recycling Facts" Contains brochures from Manitoba Product Stewardship Corporation: "Recycling Facts," "Reduce Your Waste," "Litter—What Can You Do?"

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 6.1.1 Use advanced organization...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.7 Use problem identification...

SLO 6.2.2 Use repetition to imitate a language model...

SLO 6.2.12 Use inferencing to guess the meanings...

Instructional and Learning Sequence**Sequence 4**

This can be done in class or outside class if students have computer access.

Listening/Speaking Activity

Before listening, have students use the title to predict the topic and words that might be included in "Saving the Earth" (interview, "medium difficulty," 1:07; listening exercises included). After listening, check lists of words.

OR

"A Greener World" (lecture, "very difficult," 3:17; listening exercises included). Analyze this short lecture for discourse markers that signal the main points. Explain and exemplify.

Ask students to listen for main ideas, then summarize in two to three sentences; listen again and do comprehension question; third listening, summarize in 50 to 100 words; listen once again while reading the script, paying attention to phrasing, intonation, pauses, stress, et cetera.

Then have students discuss in a small group what each "key" requires.

Language Features**Vocabulary**

From AWL: achieve, awareness, commentator, concept, consumer, corporate, crucial, decade, dispose, equipment, established, exceeds, final, grants, implementing, incentives, involved, link, methods, process, regions, remove, research, resources, sector, technology

Discourse Features

"three keys... first key..."

Student Learning Tasks

Assignment

- a) Use the title to predict the topic and words that might be included.
- b) After listening, check lists of words. (I) (C)

OR

- a) Listen to "A Greener World" (lecture). Analyze this short lecture for discourse markers that signal the main points.
- b) Listen for main ideas, then summarize in two to three sentences; listen again and do the comprehension question; third listening, summarize in 50 to 100 words; listen once again while reading the script, paying attention to phrasing, intonation, pauses, and stress. (I)
- c) Discuss in a small group what each "key" requires. (C)

Teacher Notes and References



Handout 2-47: "Saving the Earth"

Handout 2-48: "A Greener World"

Internet Resources: "A Greener World" lecture at:

<www.esl-lab.com/world/worldrd1.htm>

"Saving the Earth" interview at: <www.esl-lab.com/envirol/envirol.htm>

OR

Substitute other short talks about recycling from TV, radio, or the Internet.



Students can use the script as a model for role play.



These resources are excellent for individual students to use in a computer lab, or for classes to use with one computer and

media projector.

Provide a skeleton listening outline of ideas based on the transcript that is available.

Preview the discourse markers and important vocabulary.

Outcomes

SLO 1.7 Evaluate a given text...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.2 Use several visual techniques...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 2.4 Use the steps of the writing process...

SLO 3.2 Develop and implement a plan for researching...

SLO 4.1 Use language to encourage...

SLO 4.2 Communicate effectively to work with others...

SLO 6.1.2 Use organizational planning...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.11 Use transfer...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.2.13 Use recombination...

SLO 6.3.1 Use questioning for clarification...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Sequence 5

Options

- **Speaking:** Show a "blue box" or a visual of one. Discuss residential recycling programs in Canada. Compare attitudes toward waste/litter in students' home countries.
- **Writing/Speaking:** With a partner, have students choose one waste management problem in their immediate environment (e.g., school, neighbourhood, or city), and create a web or concept map of possible or already implemented solutions and their consequences. Share maps with the class. Encourage questions.
- **Writing:** Assign students to write a compare/contrast paragraph on strategies for waste management, based on what they have read about Manitoba and their country of origin. Alternatively, have students research uses for one recyclable (e.g., plastics) and write a paragraph explaining the process and the products.

Speaking: Working with a partner or small group, have students imagine that they are having a test on the content material studied in this module so far. Have them predict several terms that would likely be on a test and three short-answer essay questions that the teacher might ask. Present the questions and the answers to the class. The class can evaluate the likelihood of the items being tested and the correctness of the answers.

Language Features

Structures

question forms (review)

Discourse Features

prediction and hedging (modals)

asking opinions

Student Learning Tasks

Discuss residential recycling programs in Canada. Compare attitudes toward waste/litter in your country of origin. (C)

OR

Assignment

With a partner, choose one waste management problem in your immediate environment (e.g., school, neighbourhood, or city), and create a web or concept map of possible or already implemented solutions and their consequences. Share maps with the class. (P) (C)

OR

Write a compare/contrast paragraph on strategies for waste management, based on what you have read about Manitoba and your country of origin. Or, research uses for one recyclable (e.g., plastics) and write a paragraph explaining the process and the products. (I)

Speaking:

Working with a partner or small group, imagine a test on the content material studied in this module. Predict several terms that would likely be on a test and three short-answer essay questions that the teacher might ask. Present the questions and the answers to the class. (B) (C)

Teacher Notes and References

Visual: "Blue box" for residential recycling (teacher-provided)

Outcomes

SLO 3.1 Seek, organize, and synthesize information...

SLO 6.1.7 Use problem identification...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.1 Use resourcing to access...

SLO 6.2.4 Use note taking...

Instructional and Learning Sequence

Project

Time to continue work on the environmental project.

Roundup (options)

Have students:

- Add to their personal dictionaries.
- Write a list of 10 ways that they personally can do the three Rs in their journals
- Respond in a Learning Log to any one of the today's listening activities: What do you think caused any difficulties you had comprehending the speech? How could you work on this?

Student Learning Tasks**Teacher Notes and References****Assignment**

Continue work on the environmental project.



Provide students with class time to finish projects. Arrange for presentation times.

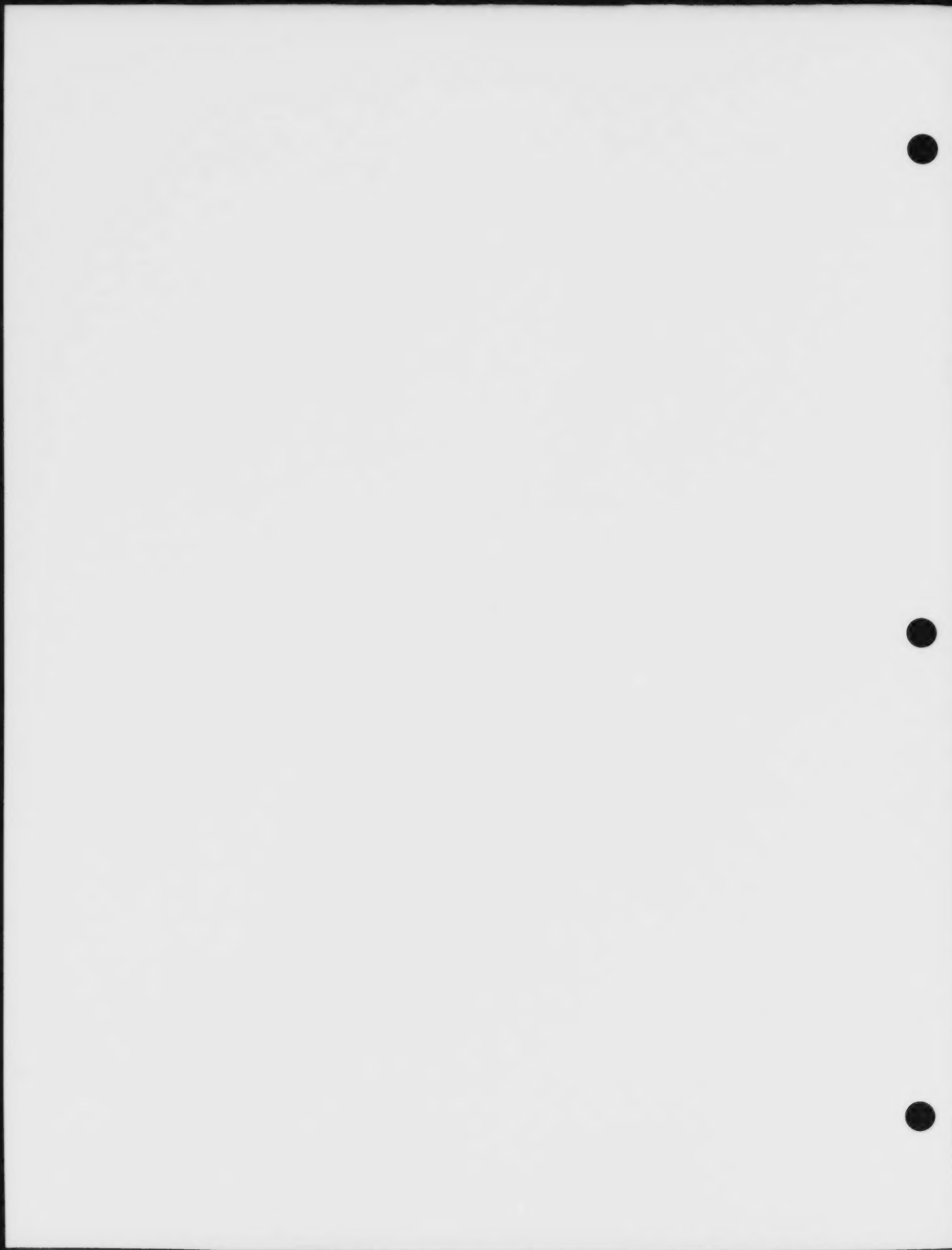
- a) Add words to your personal dictionaries.
- b) Write a list of 10 ways that you personally can do the three Rs.
- c) In your Learning Log, write about anything you think caused you difficulty in comprehending the speech. How could you work on this?



Consumption Cartoon



www.newdream.org/feature/comics/kirk-neighbor.html>. Reproduced by permission.



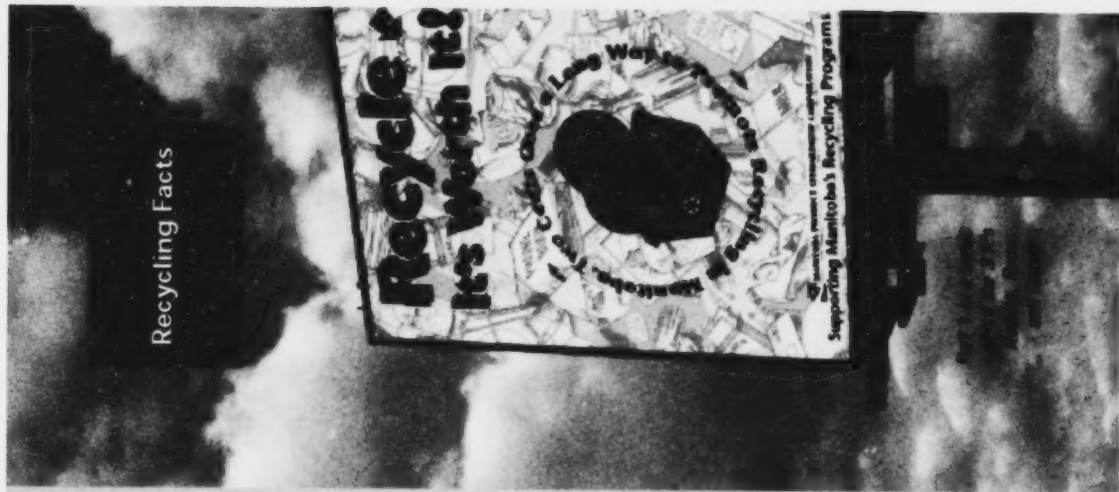
Video Listening Guide**Instructions:**

1. Read and pronounce the following words with your teacher.
2. As you view the video, listen for each word. Number it in the order you hear it.
3. After viewing, guess the meanings of the words, or look them up in the dictionary. Watch the video a second time, but this time write down as much as possible of the phrase or sentence in which the word occurred.
4. After the second viewing, use each word in a sentence that communicates the meaning of the word. Share your sentences with a partner.

Word + Surrounding Words	Order	New Sentence



Recycling Facts



Recycling Facts

The Manitoba Product Stewardship Corporation (MPSC) was introduced on January 1, 1995 to encourage the expansion of convenient and efficient recycling services across Manitoba. MPSC is an independent, non-profit organization representing the interests of all sectors of Manitoba, including consumers, industry, municipalities and governments.

Under the Waste Reduction and Prevention Act (WRAP) the MPSC is mandated to establish and administer a waste reduction and prevention program for designated materials in Manitoba. Some of our current programs and initiatives are:

- Manitoba Product Stewardship Program (MPSP) — Provides financial assistance and technical support for community recycling programs throughout Manitoba. There are currently 160 municipal recycling programs active in the province, for which the MPSC pays 80% of the net costs of recycling.

- Student Action for Recycling (STAR) — An education resource which provides K-Senior 4 schools in Manitoba with an annual \$500 honorarium to encourage in-school recycling and waste reduction programs. MPSC also has an environmental education website at www.virtualrecycling.com.

- STAR Plus — A lending and support program for post-secondary educational institutions in Manitoba to recycle MPSP eligible materials.

- Litter Abatement Program — An annual spring media campaign targeted to reduce litter in Manitoba. Campaigns include "Stomp Dunk Your Junk — Don't Litter," "Guth Your Junk" and "Keep Manitoba Beautiful."

All activities of the MPSC are currently funded by the 2 cent levy on beverage containers.

For more information contact:

Manitoba Product Stewardship Corporation

280 - 530 Kesteven Blvd.
Winnipeg, Manitoba
R3M 1Z4

Phone: 989-6222
or 1-800-280-9788
Fax: 204-989-6229
Email: info@mpsc.mb.ca
or visit us at
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Manitoba
Product Stewardship
Corporation

mpsc

Supporting
Manitoba's
Recycling Programs

3 Rs Tips

What else can I do?

So now you know it's important to recycle, but there is actually an overall strategy for reducing waste, called the 3 R's. How does Recycling fit in? Recycling is actually the third R in the strategy, which includes:

REDUCE:

- ♦ Purchasing items with the least amount of packaging
- ♦ Buying in bulk when appropriate
- ♦ Not purchasing items that you don't need

REUSE:

- ♦ Using a refillable mug for your coffee
- ♦ Sharing newspapers and magazines with friends and family
- ♦ Avoiding disposable items

RECYCLE:

- ♦ Using your community recycling program
- ♦ Purchasing products made from recycled materials

Call your municipal office to find out about 3 R's programs in your community!

Round them all up!



Recycling Facts (continued)

Paper

Every year, Manitobans throw out about 32,000 metric tonnes of newspapers, magazines and flyers. Only about 20,000 metric tonnes of this material is recycled. That means about 30% of this material is still being landfilled, burned or littered. **What a waste!**

Did You Know...

- ◆ The amount of landfill space that is taken up by one tonne of newspaper is 3 cubic meters.
- ◆ One metric tonne of recycled newspaper saves about 17 trees.
- ◆ Using recycled newspapers and magazines reduces the need for mining clay soils, which is used to make newspaper pulp.
- ◆ The newspaper collected in your community recycling program is made into new newspaper (so the Sunday comics you're reading now may be the Sports pages you read two months ago!)

PET (#1) Plastics

Each year, Manitobans throw out about 2,000 tonnes of PET (#1) plastic. About 800 tonnes of PET is recycled... that's only about 40%! The rest... trashed. **What a waste!**

Did You Know...

- ◆ Plastics can take up to 400 years to break down in a landfill.
- ◆ PET plastic bottles collected for recycling in Manitoba are usually made into carpeting and fibrefill for pillows, sleeping bags and ski jackets, but can also be made into t-shirts and sweaters, automotive parts, and floor tiles!



Glass

Every year, Manitobans throw out about 14,000 tonnes of glass jars and bottles. Only about 4,500 tonnes are recycled. **What a waste!**

Did You Know...

- ◆ It takes one million years for a glass bottle to break down in a landfill.
- ◆ In Manitoba, most recycled container glass is used as aggregate material in roads and sidewalks.
- ◆ This saves your community recycling program energy and money because the glass doesn't have to be shipped to distant markets. Just think... you could be walking on old jam jars!

Aluminum

Each year, Manitobans throw out about 1,400 tonnes of aluminum cans. Only about 30% is recycled in community programs. **What a waste!**

Did You Know...

- ◆ Recycling one aluminum can saves enough energy to run your television for 3 hours.
- ◆ Aluminum takes 500 years to break down.
- ◆ Once aluminum cans have been remelted, they can be used in any product made from aluminum.
- ◆ Aluminum is the most valuable (\$\$\$) recyclable material. Help your community keep recycling costs down. Don't trash cans!

Steel (Tin) Cans

Each year, Manitobans throw out about 5,000 tonnes of steel cans. Only about 1,500 tonnes of this steel is recycled. The rest? You guessed it — landfilled or littered. **What a waste!**

Did You Know...

- ◆ When scrap iron is used instead of iron ore to make steel, water consumption is reduced by about 50%.
- ◆ Most of the steel cans collected in Manitoba are recycled at local steel mills.

We create a lot of waste. In one year each of us produces over 250 kilograms of waste in our home.

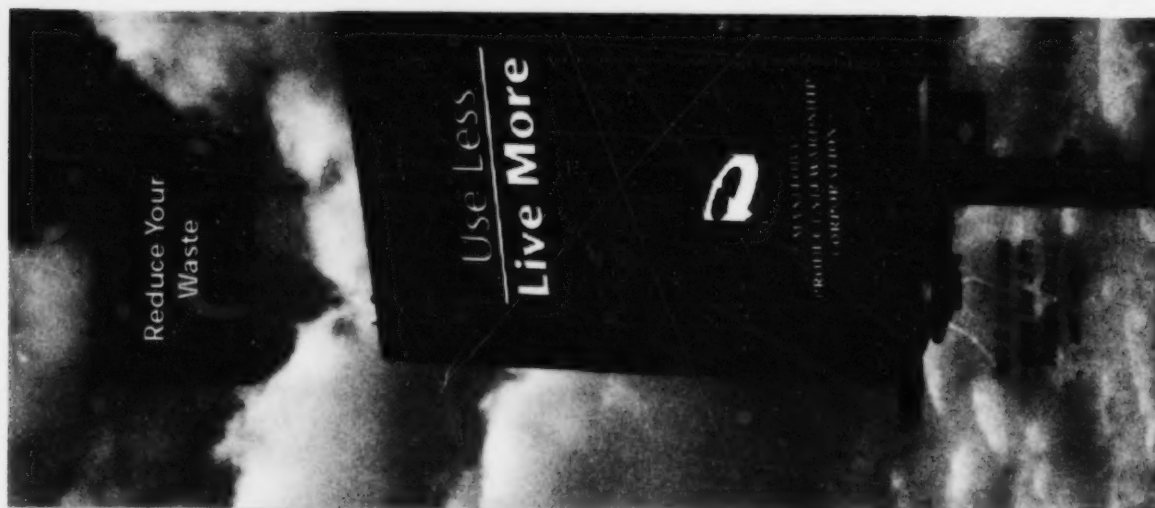
You have probably heard of Recycling. You probably even recycle a whole bunch of stuff from your home. Chances are that you live in, or close to, a community that has a recycling program. That's because there are over 160 recycling programs in Manitoba, serving almost 1 million Manitobans!

But what exactly is Recycling? Recycling is a term that describes the process of converting our "waste" into resources that can be made into new products. It sounds simple, but there are several critical steps involved:

1. First, it is up to us to separate recyclable material from our regular garbage.
2. Then, your municipality (or their recycling agent) will collect the materials, sort them, and send them to companies all over the world — and some right here in Manitoba!
3. These companies use the recycled materials to produce new products, conserve natural resources.
4. The process isn't over yet! Then we all need to buy items made from recycled materials to ensure that companies continue to use recycled material in their products. **Buy Recycled!**

But what happens to all the stuff I recycle? Keep reading for tonnes of Manitoba recycling facts!

Recycling Facts (continued)



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- **Litter Abatement Program** — An annual spring media campaign targeted to reduce litter in Manitoba. Campaigns include "Clean Desk Your Junk — Don't Litter," "Swath Your Trash," and "Tidy Manitoba Beautiful."

All activities of the MPSC are currently funded by the 2 cent levy on beverage containers.

For more information contact:

Manitoba Product Stewardship Corporation

200 - 530 Kenaston Blvd.
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mpsc

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3 Rs Tips

What else can I do?

So now you know that REDUCE is the first R, but then how do REUSE and RECYCLE fit in?

Reusing items is easy... many of the items that you recycle, such as glass jars and plastic containers, can be reused over again as storage containers.

Recycling is easier than ever, thanks to the over 160 community recycling programs in Manitoba. Recycling valuable resources results in many environmental and economic benefits. For instance, since April, 1997 in our province:

- ♦ Recycled materials were sold at an average of \$75 per metric tonne.
- ♦ 101,671 metric tonnes of household waste was recycled.
- ♦ This means that over \$7.6 million dollars stayed in Manitoba's economy rather than simply being thrown out with the trash!

So Use Less to Live More!

REDUCE — Reduce the amount of waste you create by using some of the ideas in this brochure

REUSE — Reuse items whenever possible.

RECYCLE — Take part in your community recycling program, and purchase products made from recycled materials.

Check with your municipal office to find out about 3 R's programs in your community!

(continued)

Recycling Facts (continued)

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Did You Know...

- When scrap iron is used instead of iron ore to make steel, water consumption is reduced by about 50%.
- Most of the steel cans collected in Manitoba are recycled at local steel mills.

Recycle — convert (waste) to a reusable material.
(Oxford Dictionary, Volume 9)

We create a lot of waste. In one year each of us produces over 250 kilograms of waste in our home.

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But what exactly is Recycling? The process of recycling describes the process of converting waste materials into new products and resources that can be made into new products. It's a simple but there are several steps to it.

1. First, it's up to us to separate the waste from our regular garbage.
 2. Then, your municipality (or a private company) collect the materials, sort them and transport them to companies all over the world.
 3. These companies use the recycled materials to produce new products, conserving resources.
 4. The process isn't over yet! Then we have to buy items made from recycled materials.
- Companies continue to use recycled materials to produce products. Buy Recycled!

But what happens to all the stuff recycled? Keep reading for tonnes of Manitoba recycling facts!

Recycling Facts (continued)



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- **Student Action for Recycling (SAR)** — An education resource which provides K, Senior 4 schools in Manitoba with an annual \$500 honorarium to encourage in-school recycling and waste reduction programs. MPSC also has an environmental education website at www.virtualwasting.com.
- **SAR Plus** — A funding and support program for post-secondary educational institutions in Manitoba to recycle MPSP eligible materials.
- **Later Adoption Program** — An annual Spring media campaign targeted to reduce litter in Manitoba. Campaigns include "Stain Bunk Your Junk — Don't Litter," "Switch Your Lash," and "Keep Manitoba Beautiful."

All activities of the MPSC are currently funded by the 2 cent levy on beverage containers.

For more information contact:

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mpsc Manitoba Product Stewardship Corporation



3 Rs Tips

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(continued)

Recycling Facts (continued)

Steps to Using Less

Buy Only What You Really Need

Before purchasing something, ask yourself if you really need this item. (How much junk do you have collecting dust in your basement or garage that you can't live without just a short time ago?)

Buy Durable Products

Keep in mind that nothing is really "disposable" — in most cases it doesn't go away, it just takes up space in a landfill site!

Buy Quality

Buy the highest quality item you can afford and have it repaired when necessary. Nothing lasts longer where this principle can be easily applied.

Buy in Bulk

When buying food or other products, buy in bulk in quantity, buy the largest amount you can easily store and use.

Read Consumer and Guide

Always try to choose items with the least amount of packaging. Remember, what is inside the package is just your part!

Buy Recycled

When possible, buy products made from recycled materials. This helps to reduce waste and recycling materials collected through recycling programs.

Buy the One Bag

Look for a brown bag when you shop or reuse a plastic bag that you were given on a previous trip.

Buy Less Often

this means your CD's, sports equipment, cars, building materials, clothing, furniture — almost anything!

Buy or Hire Instead of Buying

Many things that you need only occasionally, such as holiday party supplies, can be rented or borrowed.

And guess what? Many of these ideas are not only environmentally friendly, but will save you money too!

...and Living More!

Smart shoppers make a big difference in how much waste we create, but there are lots of other things that we can do to be kind to our environment and create less pollution. Here are a few suggestions:

1) Compost

Composting can help to reduce your household waste by about 1/3, and help your yard and garden at the same time. For information on composting, call Resources Conservation Council at (204) 825-3777.

2) Reduce Toxic Wastes at Home

Look for products that are labeled "low toxicity" and use only them! Learn more products.

Household Alternatives

Try home-made alternatives to household products. Here are some ideas:

- Glass Cleaner — 1 part vinegar to 2 parts water
- Furniture Polish — 1 part kerosene to 2 parts vegetable oil
- Disinfectant — 1/2 cup borax to 1 cup water
- Greaseless Airless Steel Cleaner — baking soda and a damp cloth

Painting Supplies — When painting, buy only what you need. Sweep leftover paint with linseed.

Steel Oil — Do you change your own oil? Call your municipality to find out where you can recycle it!

Household Hazardous Waste — Check with your municipality to see where you should dispose of anything identified on the container as flammable, caustic or toxic.

It's Time to Go to Recycle!

Note: Many of the ideas in this brochure came from some of the great books available about reducing waste. Check your local library!

Reduce Your Waste

Fact: More than 20% of the garbage thrown out by the average household is made up of plastic.

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You and I create a lot of waste. In one year each of us produces over 250 kilograms of waste in our homes. That's a lot of "garbage" but did you know... we don't need to create so much waste in the first place? There are lots of ways you can **REDUCE** the amount of waste you create, simply by **Using Less and Living More!**

There are many ways to get the things you need without contributing to our "throwaway" society. By following the suggestions in this brochure, you can reduce the amount of garbage you throw out and reduce the amount of pollution in our environment. You'll also reduce the energy required to produce and transport goods while conserving valuable natural resources. That's what **Using Less and Living More** is all about.

Reducing consumption is the first step. It all starts with making smart choices while shopping and asking yourself whether the items you are purchasing are really necessary.

Read on for ideas to **Use Less and Live More!**

Recycling Facts (continued)

Reduce Your waste

Fact: When not trash, disappears off the curb it is buried in the ground where it can leach out, unchanged for centuries.

Fact: More than 25% of the garbage thrown out by the average Manitoba household is packaging.

Fact: Canadians take home over 55 million plastic shopping bags each week.

You will create a lot of waste in one year each if we produce over 250 kilograms of waste in our homes that's a lot of "garbage" like you know... we don't need to create so much waste in the first place! There are lots of ways you can REDUCE the amount of waste you create, simply by Using Less and Using More!

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Based on facts from Use Less and Live More!

Steps to Using Less

Buy Only What You Really Need

Before purchasing something, ask yourself if you really need this item. (How much junk do you have collecting dust in your basement or garage that you couldn't live without just a short time ago?)

Avoid Disposable Products

Keep in mind that nothing is really "disposable" — in most cases it doesn't go away, it just takes up space in a landfill site!

Buy Quality

Buy the highest quality item you can afford and have it repaired when necessary. Clothing is one area where this principle can be easily applied.

Buy in Bulk

When buying food or other products to be consumed in quantity, buy the largest amount you can easily store and use.

Avoid Over-packaged Goods

Always try to choose items with the least amount of packaging. Remember, it's what is inside the package that you want!

Buy Recycled Products

When possible, buy products made from recycled material. This helps to ensure stable markets for materials collected through recycling programs.

Carry Your Own Bags

Take your own bag when you shop, or reuse a plastic bag that you were given on a previous trip.

Buy Used Items

This applies to CD's, sports equipment, cars, building material, clothing, furniture — almost anything!

Rent or Share Instead of Buying

Many things that you need only occasionally, such as tools or party supplies, can be rented or borrowed.

And guess what? Many of these ideas are not only environmentally friendly, but will save you money too!

...and Living More!

Smart shoppers make a big difference in how much waste we create, but there are lots of other things that we can do to be kind to our environment and create less pollution. Here are a few suggestions:

1) Compost

Composting can help to reduce your household waste by about 1/3, and help your yard and garden as well. For information on composting, call Resources Conservation Manitoba at (204) 925-3777.

2) Reduce toxic wastes at home

Yard and garden — Avoid the use of pesticides and use only natural lawn care products.

Household Cleaning — Try homemade, alternative cleaning products around the house, such as:

- ◆ Glass Cleaner — 1 part vinegar to 10 parts water
- ◆ Furniture Polish — 1 part lemon juice to 2 parts vegetable oil
- ◆ Disinfectant — 1/2 cup borax to 1 cup water
- ◆ Chrome/Stainless Steel cleaner — baking soda and a damp cloth

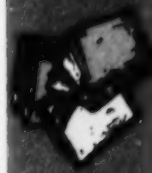
Painting Supplies — When painting, buy only what you need. Swap leftover paint with friends.

Used Oil — Do you change your own oil? Call your municipality to find out where you can recycle it!

Household Hazardous Waste — Check with your municipality to see where you should dispose of anything identified on the container as flammable, caustic or toxic.

3) Don't forget to Recycle!

Note: Many of the items in this brochure come from some of the great books available about reducing waste. Check your local library!



Recycling Facts (continued)

-Litter- What Can You Do?

KEEP MANITOBA BEAUTIFUL

...don't litter.

MPSC's Anti-Litter Strategy

The MPSC encourages litter abatement activities to complement waste reduction and recycling activities in Manitoba. Consistent with our anti-litter strategy the MPSC finances billboards with an anti-litter message across Manitoba. Those communities without billboards can take advantage of the posters that are produced with these same messages.

MPSC's anti-litter billboard campaigns have included "Slam Dunk Your Junk — Don't Litter" and "Slash Your Trash — Don't Litter." During the XIII Pan Am Games, "Keep Manitoba Beautiful — Don't Litter" was introduced and displayed throughout Manitoba.

"Keep Manitoba Beautiful — Don't Litter" is a gentle reminder that littering detracts from the natural beauty of our province. Litter devalues our natural environment and affects the image that tourists have of our towns, cities and parks. The negative image litter portrays reduces the respect and pride that Manitobans take in their community.

Final Word on Litter

In the big picture, litter appears unable to compete with the ozone hole and the greenhouse effect. As an environmental problem littering is an individual decision to pollute our environment. Most of us know that littering is illegal but the challenge in catching people in the act of littering makes enforcement of these laws difficult. The only real way to stop litter is for each of us to be educated about the problem.

Consider this: it takes approximately 400 years for a plastic bottle to break down, 500 years for an aluminum can and an estimated 1 million years for a glass bottle to break down to dust. These commonly littered items don't just disappear, so choose not to litter — Keep Manitoba Beautiful.

All activities of the MPSC are currently funded by the 2 cent levy on beverage containers.

For more information contact:
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Manitoba Product Stewardship Corporation
Supporting Manitoba's Recycling Programs

(continued)

Recycling Facts (continued)

The Seven Sources of Litter

Although we often assume that litter can be blamed solely on pedestrians and motorists, there are actually seven primary sources of litter. It is important to recognize that these sources of litter can be either deliberate or accidental in nature.

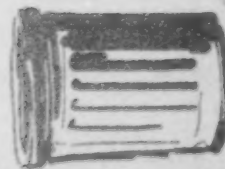
- 1 Improperly handled household garbage and recycling
- 2 Improperly handled commercial refuse
- 3 Contamination and deterioration sites
- 4 Loading and delivery areas
- 5 Uncovered trucks
- 6 Pedestrians
- 7 Motorists

Enter costs your community both financially and environmentally has dollars are spent cleaning litter from parks, roads and public places. Litter pollutes our waterway, damages our landscapes and injures animals and people.

Intercity is contrary to the principles of environmental stewardship. Inter-city negatively impact community recycling programs, for

- ◆ Later from recycling jacking up deposits may result in negative perceptions regarding their effectiveness in cleaning up the environment
- ◆ Later may include products and materials which are recyclable and should be recovered

What Can You Do?



STASH YOUR TRASH
don't litter.

- Set an example for others by not littering.
- Make sure trash cans have lids that can be securely latched.
- If you own a business, check dumpsters daily to ensure that top and side doors are closed. Don't overfill dumpsters.
- Use a litter bag inside your car, truck, boat and on your bicycle.
- When outdoor child care trash until you reach a trash receptacle.
- Cover open loads on all trucks.
- Organize or take part in a community clean-up.

Community clean-up Events

If you decide to organize a clean up, there are a number of things to make your project work.

- ◆ Get permission from the property owner of the area you want to clean.
- ◆ Visit the site before the day of the clean up to decide the type of litter that will need to be removed. Large debris may require large equipment.
- ◆ Take before and after photos.
- ◆ Tell your local paper, radio station, or TV channel about your project.
- ◆ Ask local businesses to sponsor bags, gloves, donuts, coffee.
- ◆ Recruit community groups and any other community members who may want to participate.
- ◆ Keep a diary of the event and a log of names and phone numbers if you decide to plan another clean up next year.
- ◆ Thank everyone who was involved!

Recycling Facts (continued)

Who Litters?

The Seven Sources of Litter

Although we often assume that litter can be blamed solely on pedestrians and motorists there are actually seven primary sources of litter. It is important to recognize that these sources of litter can be either deliberate or accidental in nature.

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- 2 Improperly handled commercial refuse
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Litter costs your community, both financially and environmentally. Tax dollars are spent cleaning litter from parks, roads and public places. Litter pollutes our waterways, damages our landscapes and injures animals and people.

Litter and Recycling

Littering is contrary to the principles of environmental stewardship. Litter can negatively impact community recycling programs, too:

- ◆ Litter from recycling pickup or depots may result in negative perceptions regarding their effectiveness in cleaning up the environment
- ◆ Litter may include products and materials which are recyclable and should be recovered

When was the last time you saw someone littering? Maybe it was recently, or it may be difficult to think of a time when you witnessed someone littering. But, litter does not simply appear on its own. When it comes to littering people are the problem and people are also the solution. Knowing more about littering will help us all become less of the problem and more of that solution.

Litter is often most apparent in the spring and summer. The grass is greening, the trees are budding, the flowers are blooming and the snow has melted to reveal the litter that has been buried all winter.

Studies show that people litter when:

- ◆ They feel no sense of ownership or responsibility to the property
- ◆ They believe someone else will clean up after them
- ◆ Litter is already present
- ◆ Trash receptacles are not easily accessible

- ◆ Set an example for others by not littering
- ◆ Make sure trash cans have lids that can be securely fastened
- ◆ If you own a business, check dumpsters daily to ensure that top and side doors are closed. Don't over fill dumpsters
- ◆ Use a litter bag inside your car, truck, boat and on your bicycle
- ◆ When outdoors hold onto trash until you reach a trash receptacle
- ◆ Cover open loads on all trucks
- ◆ Organize or take part in a community clean-up

Community clean-up Events

If you decide to organize a clean-up there are a number of tips to make your project work:

- ◆ Get permission from the property owner of the area you want to clean
- ◆ Visit the site before the day of the clean-up to decide the type of litter that will need to be removed (large debris may require large equipment)
- ◆ Take "before" and "after" photos
- ◆ Tell your local paper, radio station, or TV channel about your project
- ◆ Ask local businesses to sponsor bags, gloves, donuts, coffee
- ◆ Recruit community groups and any other community members who may want to participate
- ◆ Keep a diary of the event and a log of names and phone numbers if you decide to plan another clean-up next year
- ◆ Thank everyone who was involved!

STASH YOUR TRASH
don't litter.

What Can You Do?

Saving the Earth

I. Pre-Listening Exercises

1. Name the three most important environmental issues today and propose solutions for each.

II. Listening Exercises

1. Listen to the interview by pressing the "Play" button of the audio type you want to hear, and answer the questions. Press the "Final Score" button to check your quiz.



1. What is the name of the girl being interviewed?
A. Alice
B. Ellen
C. Alex
2. She says we should save water when:
A. washing cars
B. cleaning clothes
C. taking a bath
3. The girl's second suggestion is about:
A. separating different types of garbage
B. disposing of trash properly
C. having a family clean-up party
4. By recycling paper, we can:
A. protect the forests
B. cut down on waste
C. save money
5. What does the girl do once a month?
A. She visits a recycling center.
B. She cleans a neighbourhood park.
C. She collects newspapers.
2. Listen to the conversation again as you read the Quiz Script.
3. Review the Text Completion Quiz.

III. Post-Listening Exercises

1. Write a short article about the biggest environmental problem facing your country of origin and a solution to resolving this issue.



A Greener World

I. Pre-Listening Exercises

1. Name three environmental problems that face our world today.
2. How would you solve these problems?
3. What image comes to your mind when you think of "recycling?"

II. Listening Exercises

1. Listen to the conversation by pressing the "Play" button of the audio type you want to hear, and answer the questions. Press the "Final Score" button to check your quiz.



1. What would be the best title for this lecture?
 - A. Important Keys to Recycling Paper
 - B. Technological Advances Improve Recycling
 - C. Steps to Improving Recycling
2. According to the article, paper materials that are difficult to recycle include:
 - A. copy paper
 - B. shredded documents
 - C. food wrappers
3. In some cases, recycling could be hazardous to the environment if special precautions are not taken because:
 - A. industrial emissions are sometimes created in the process.
 - B. chemical waste is sometimes produced as a result.
 - C. a great deal of energy is expended to create new products.

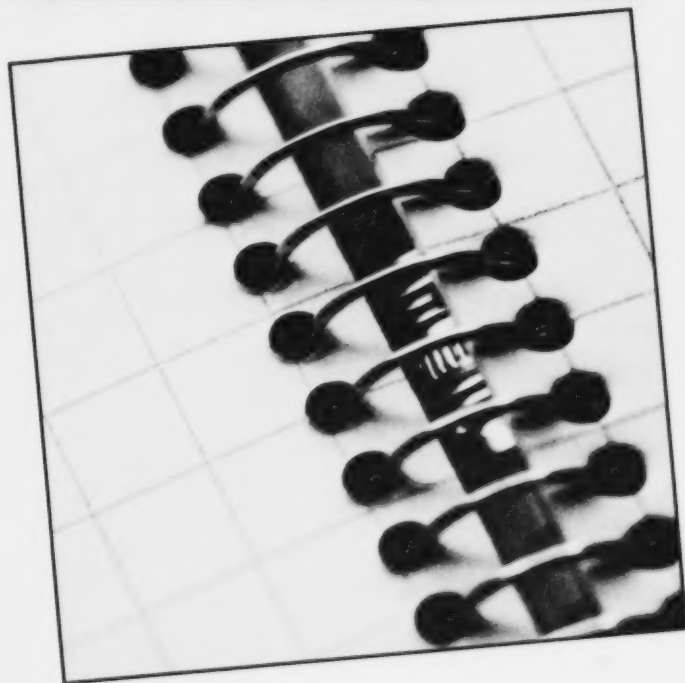
4. According to the lecture, the demand for recyclable materials in the manufacturing of new products is sometimes sluggish because
 - A. some governments are unwilling to support expensive recycling methods.
 - B. there is a lack of advanced technology to process the materials.
 - C. businesses do not invest enough money into research.
5. Which is NOT one of the main keys to recycling as mentioned in the lecture?
 - A. government regulation of waste
 - B. better technology
 - C. more demand for recycled materials

-
2. Listen to the conversation again as you read the Quiz Script.

III. Post-Listening Exercises

1. Write one specific way individuals can have an impact on saving the environment.





Topic 9 Environmental Presentation

This culminating research and speaking activity begins early in the module. Students work through the steps of choosing a topic, framing research questions, finding and documenting resources, taking notes, organizing information, writing the text, planning and producing a computer

presentation, rehearsing, and presenting. Students listen actively for information and peer evaluation.

Outcomes

This topic draws on many of the general and specific learning outcomes for Module 2.

Instructional and Learning Sequence

Sequence 1

Environmental Presentation

The project was introduced at the beginning of the module. Note the requirements: "Think of a specific environmental problem that your city or country has. Research the causes, effects/impact, and possible solutions. Students will present their findings to the class as part of a proposal to some level of government or to the public about ways to solve the problem. The final product will be a three- to five-minute oral presentation, using a computer presentation program or well-designed posters for visual support. Students may use their notes from the slide-show view of a computer presentation program, but may not read from a full text."

Guide students in documenting sources.

Vocabulary and **structures** are drawn from almost all learning outcomes in the module.

Student Learning Tasks

Assignment

- Identify a specific environmental problem that your city or country has.
- Research the causes, effects/impact, and possible solutions.
- Present findings to the class as part of a proposal to some level of government or to the public about ways to solve the problem.
- The final product will be a three- to five-minute oral presentation, using a computer presentation program or well-designed posters for visual support.
- Use the notes from the slide-show view of a computer presentation program. Do not read from a full text.
- Carefully document your sources.

Teacher Notes and References



Internet, books, periodicals, interviews, documentation guide (APA, MLA)—teacher-provided



This can be done as an individual or partner project, depending on time and desired outcomes.

Allow time throughout the module to work on the research and production. You may set checkup dates for various stages to help students manage time. Allow time to rehearse before final presentation.



Encourage the use of many learning strategies, including:

- directed attention (6.1.3)
- functional planning (6.1.4)
- selective attention (6.1.5)
- self-monitoring (6.1.6)
- cognitive learning strategies (6.2)
- resourcing (6.2.1)
- note taking (6.2.4)
- deduction/induction (6.2.5)
- imagery (6.2.8)
- transfer (6.2.11)
- social and affective learning strategies (6.3)
- questioning for clarification (6.3.1)
- co-operation (6.3.2)
- positive self-talk (6.3.3)

Outcomes

Instructional and Learning Sequence

Presentations should include all of the the points listed in the Student Learning Tasks column.

Give students the option to produce a written report along with their oral presentations.

Have students listen actively to their peers to complete the listening guide. See **Handout 2-49: "Presentation Listening Guide."** Tell students that there will be an "open-notes" quiz at the end. After each presentation, allow questioning for clarification. Have students check their notes with each other.

OR

Have students compose three questions about their own presentations. Draw on these to produce a short quiz.

This activity parallels note taking in a lecture or seminar setting.

Roundup

Use this opportunity for reflection. Have students write about the strategies they used to complete the task, what they felt they did well, and what they would do differently next time.

Student Learning Tasks**Assessment**

Presentation must include:

- Title page, with topic, presenter's name, course, date
- Table of contents
- Introduction, background, problem, impact/effects, possible solutions, consequences, summary
- Visuals that enhance the information: chart, graph, appropriate graphics
- Point-form notes, edited for grammar and spelling
- Design that is easily read
- References, prepared according to standard documentation system (I)

Assignment

- a) Listen actively to your peers in order to complete the listening guide.
- b) Take an "open-notes" quiz.
- c) Check your notes with peers. (I) (B) (C)

Teacher Notes and References**Appendix 12: Presentation Evaluation Rubric**

The final product may be a poster presentation, but it is more authentic and motivating if done on a computer. Although students will follow the same writing process as for a formal essay, the drafts may be sentence outlines. Using the presentation notes or an outline encourages students to speak rather than read; however, some may memorize the entire text. Emphasize the need to speak to the audience.

Point-form slides encourage students to take notes and retell in their own words.

**Handout 2-49: "Presentation Listening Guide"**

The short teacher-produced quiz can be taken from information that would be collected in the listening guide.

The note taking and quiz encourage recursive use of essential vocabulary.

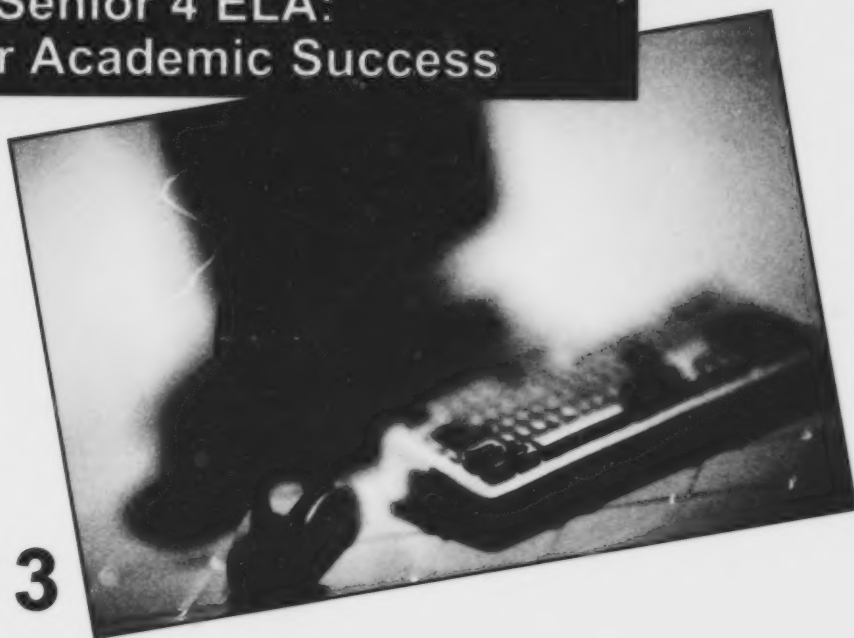


Presentation Listening Guide

One Suggestion												
Two Good Points												
Solutions												
Effects												
Causes												
Speaker/Topic												



Senior 4 ELA: EAL for Academic Success



Module 3

Promise and Peril:

The Impact of Modern Technology

Modern technology offers promise and peril. In this module, students consider the impact on individuals, society, and the environment of several important technologies. Students use interviews, surveys, graphics, and increasingly challenging readings, including technical reports and abstracts, and the topics and readings provide contexts to develop essential academic and content-area vocabulary in authentic tasks. Students practise note taking, follow the flow of argument, determine viewpoints, and synthesize information to write short texts on controversial topics. They search for information on the Internet and conduct their own interviews and surveys. Writing tasks include using analogies, explaining concepts, paraphrasing, writing a critique, developing a persuasive essay, and using quotations and citations. Students may also write a scenario, design an information brochure, and write a proposal. Orally, students engage in discussions of opinion, rank items according to criteria and justify choices, work to reach consensus, and develop a project as a team.

Module 3

Promise and Peril: The Impact of Modern Technology

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Assessment for Learning**Module 3: Promise and Peril: The Impact of Modern Technology****Topic 1: The Good Ol' Days: Back to the Future?**

Assessment Target: GLO 1/2/6: Students' ability to communicate understanding of an oral text, by using translation and appropriate grammatical structures and discourse features to clearly report information

Assessment Task: Students write a short report that conveys the information gleaned from an interview in their first language by using clear translation, a variety of reporting verbs, and three translated quotations from the interview. Check for understandable translation, and use of reporting verbs and formatted quotations.

Topic 2: Inventions

Assessment Target: GLO 2: Students' ability to use grammatical structures and discourse features to develop analogies

Assessment Task: Students write in their journals about the similarities of a number of inventions to items in the natural world. Check for accurate use of targeted language features.

Topic 3: The Information Age

Assessment Target: GLO 1/4: Students' increasing ability to evaluate a text, justifying their own interpretation in relation to others', and to use clear and respectful language to express personal opinions and respond to others

Assessment Task: Students evaluate and rank a list of ethical guidelines for computer use. Circulate the list, checking for use of respectful language to express and justify opinion, as well as responses to others.

Topic 4A: I Think, Therefore IM: Text Messaging: Bane or Boon?

Assessment Target: GLO 5: Students' knowledge of and ability to use the appropriate level of formality for a variety of social and academic situations

Assessment Task: Write a short text message to a friend on the importance of the Internet. This can form the introduction to an essay. Peer-edit according to criteria provided. Check writing samples for register and format of email and essay introduction; check peer comments for constructive criticism.

Topic 4B: Recreation and Technology: Computer Game Geeks: How Playing Video Games...

Assessment Target: GLO 1/6: Students' ability to evaluate an oral text for meaning and quality, justifying their own interpretation of text in relation to the interpretation of others; knowledge and ability to use the strategies of selective and directed attention, as well as note taking

Assessment Task: Students complete a graphic organizer while listening to two students discussing videogames. Check writing samples for evidence of comprehension.

Topic 5A: Biotechnology: GM Foods

Assessment Target: SLO 3.1/3.3: Students' ability to seek organic and synthetic information and quote or refer to sources

Assessment Task: Students write a paragraph that compares several different viewpoints on GM foods as reflected in the readings or abstracts. Check for accuracy in their writing and citing of sources.

Topic 5B: Biotechnology: Spider Silk

Assessment Target: GLO 2: Students' increasing ability to refine pronunciation to improve intelligibility

Assessment Task: Students take turns reading portions of an article aloud. Check for stress on content words and final sounds.

Topic 6: Technology and Transportation: To Drive or to Heat, That Is the Question

Assessment Target: GLO 6/2: Students' knowledge of and ability to use learning strategies and grammatical structures to form sentences from point-form notes

Assessment Task: Students write complete sentences from point-form notes. Check for effective use of learning strategy of recombination and application of grammar rules.

Topic 7A: Space Travel

Assessment Target: SLO 6.3.2: Use co-operative learning strategies—jigsaw group

Assessment Task: Observe student participation and interaction in the co-operative groups. Check for students' ability to participate and contribute to the expert groups and to communicate the information gathered to their home group.

Topic 7B: At Home in Space

Assessment Target: GLO 3/4/2: Students' knowledge of and ability to use the English language to develop and implement a plan for researching a topic; and to manage group action

Assessment Task: Teams of students prepare a written and/or oral proposal for a space colony they have designed based on group research. As teams plan their colonies, students summarize their progress and group interactions daily in their journals. Regular checking of these will give an indication of the students' attitudes and self-assessment. In addition, observe teams working using a checklist of possible conversational gambits for managing group action. Observe students' use of precise and varied vocabulary instead of general terms.

Portfolio

Item	Description
10	Topic 1: Report based on a first-language interview on the “good old days”
11	Topic 3: Scenario and discussion of an issue in computer ethics
12	Topic 5A: Chart analyzing the relationship of author, audience, purpose, and perspective based on reading several abstracts
13	Topic 7B: Student self-assessment of group interaction with a reflection on what they did well and what they would like to improve
14	Topic 7B: Written proposal for space colony
15	Student-selected journal entry

Assessment of Learning

Item	Description
The assessment focus for Module 3 is on listening, note taking and communicating increasingly challenging information and concepts, individually and as part of a working team.	
1	Vocabulary test on words, especially from the AWL, and expressions from this module Assessment Target: SLO 1.1 and SLO 2.1.1: Students’ ability to engage with increasingly difficult texts and analyze and edit texts for word choice
2	Topic 3 Assessment Target: GLO 5: Students’ knowledge of and ability to work within different cultural attitudes towards technology use Assessment Task: Students write a short scenario based on possible issues in computer ethics, discussing the perspectives of the various people involved, and including their own viewpoint. Check for awareness of the different perspectives, ability to infer how ideas may be affected by an individual’s worldview, and use of language features that express opinion and analysis.
3	Topic 5A Assessment Target: GLO 4/5: Students’ ability to recognize, compare, and analyze different perspectives and positions in academic texts and group discussions; students’ knowledge of the effect of purpose and bias on text types and the ability to infer the implications of bias Assessment Task: Students read a series of abstracts and complete a chart similar to Handout 3-20, analyzing the relationship of author, audience, purpose, and perspective. Check charts for accurate elements. Students may also write a comparison of the abstracts.

Assessment of Learning (continued)

Item	Description
4	Topic 6 Assessment Target: SLOs 6.1.2, 6.2.4, 6.2.13, 2.4 Students' knowledge of and ability to use the strategies of note taking, organizational planning, and recombination; students' knowledge of and ability to use the writing process to effectively create a properly formatted essay Assessment Task: Students write a short essay about hydrogen-cell-fuelled cars, using their point-form notes derived from the listening activity. Students should demonstrate recombination of ideas and sentence combining, the development of an effective introduction and conclusion, appropriate use of five new vocabulary words, as well as evidence of peer editing. Check notes first for use of note-taking symbols; check draft copies for evidence of peer editing; check final copies for the remaining elements.
5	Culminating Project: The written and oral presentation of a proposal for a space colony in Topic 7B is an important evaluation item for this module. (Students may additionally be assessed on one of the optional tasks.) Check final presentation for evidence of planning and effective team interaction; use of increasingly precise and appropriate lexis and language structures to describe and explain features of the colony; knowledge of and ability to use proposal format; and increasingly accurate/intelligible pronunciation. Criteria for Assessment: Students use a rubric to self-assess their language skills for group work and their attitudes towards working within a team. Using the assessment criteria provided above, teachers develop a rubric for evaluating the students' performances. Students also use a listening guide to evaluate their peers' final presentations.



Topic 1

The Good Ol' Days: Back to the Future?

(1 lesson, plus some out-of-class time)

This lesson focuses on a video interview with a nonagenarian about life in the past. Students will listen to and discuss the interview, and then they will prepare for and conduct an interview of their own. Their final writing activity will be to write a report about their interview. Some of the other main academic tasks are: pronunciation— focusing on voice and spoken language; making

and using notes to speak from; directing a discussion; asking questions, interrupting politely; checking for comprehension; recognizing indicators in discourse; note taking; recognizing the speaker's attitude; understanding intonation; voice emphasis; paraphrasing; quoting directly; referring to sources; academic writing; revising; and proofreading.

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 4.1 Use language to encourage...

SLO 6.1.1 Use advanced organization...

SLO 6.1.3 Use directed attention...

SLO 6.1.5 Use selective attention...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence**Sequence 1****Activation**

This module will explore some of the technological developments and other changes we commonly experience in today's fast-paced world. To begin, students will look at the past in order to be more aware of the many differences between past and present.

Step 1: Have students reflect on their childhood using the questions provided (see Student Learning Tasks).

Step 2: Next, have students think about their parents' youth using the questions provided (see Student Learning Tasks).

Step 3: Ask students if they get the feeling that things are changing rapidly and that the world is getting smaller. How has technology made this possible?

Refer to a question posed by poet Mark Link in his poem "Different," which is about this world that is changing so quickly: "In moments of reflection we wonder / are we gaining touch with the world at the expense of losing touch with ourselves?" (This question can be applied to a number of the ideas presented in the modules of this course.)

Tell students they will begin thinking about the question posed at the end of the poem by learning about a simpler, more slow-paced time. They will be viewing a video clip about a woman's experiences as a child and teen living in rural Manitoba in the 1920s and 1930s.

Step 4: Students first have a quick round-table discussion, predicting some of the ideas they think will be discussed in the video.

Language Features**Vocabulary**

Idioms: gaining touch, losing touch

Structures

past tense

adjectives for description

appropriate use of articles

use of subordinate conjunction "because" in predictions

Discourse Features

Expressions for prediction: I think...; perhaps...; maybe...; I predict...; I believe...

Academic Language Function

comparing, contrasting and predicting

Student Learning Tasks**Teacher Notes and References****Class Discussion**

- Reflect on your childhood.
Discuss the following questions: What did you do in your free time? What types of technology were available to you? How much time did you spend playing electronic games? Watching television? Playing sports? Doing homework? Talking to friends? How did you get to school?
- Compare and contrast this with your life at this moment. (C)
- Compare and contrast your youth to your parents' and grandparents' youths.

Discussion Questions:

- How do you think your parents' growing-up years might compare to yours? Did they get more physical activity? What kind of technology did they have? Did they spend more time with their friends and families? How did they entertain themselves? How about their grandparents? Was life different depending on the country of origin, or whether home was in a rural or urban setting? What the financial status of the family was?
- Things are changing rapidly and the world is getting smaller. How has technology made this possible? (C)
- Predict some of the ideas you think will be discussed in the video. (C)



Lead the discussion so that the topics covered in the resource video (see next page) are addressed or mentioned in the discussion.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 1.5 Examine and interpret various visual media...

SLO 2.2 Use several visual techniques...

SLO 6.1.1 Use advanced organization...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.4 Use note taking...

SLO 6.2.11 Use transfer...

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 2.1.3 Use developing control of grammatical features...

SLO 4.2 Communicate effectively to work with others...

SLO 4.6 Respond to and critique a variety of individual perspectives...

SLO 6.3.1 Use questioning for clarification...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Step 1: Give each student a copy of **Handout 3-1: "Graphic Organizer: The Good Ol' Days with Mrs. MacLeod."** Review active listening skills and note-taking practices. Students view the video, taking notes to fill in the graphic organizer. After viewing, check for comprehension. If necessary, show the video again so that all questions can be answered.

Language Features

Structures

past tense

Discourse Features

Response words to wh questions: Why~because;
When~in, on, at; Who~name; What~(various);
Where~name of place; How~(various)

Step 2: Divide students into small groups. Have them discuss Mrs. MacLeod's description and view of the past. They should decide if she feels that the technology and lifestyle available today would have made life at that time better, worse, or just different. What of the past does she feel has been lost in today's world? What does she feel has been gained due to the technology we have today? Students should decide if they agree or disagree, and why.

Step 3: Using Appendix 13: "Preparing Interview Questions" as a guide, students review the video and focus on the way the interviewer begins, indicates new questions, probes, adds information, signals that the conclusion is near, signals the conclusion, and thanks the speaker. What techniques and expressions are used? What could the interviewer have done better?

Record this information for use in the final activity.

Language Features

Structures

who, what, when, where, why, and how questions

Discourse Features

Discussion expressions: to agree or disagree, to encourage, to elaborate, to summarize, to clarify, to question

transition markers

Academic Language Functions

agreeing, disagreeing, explaining, and summarizing

Student Learning Tasks

View the video and take notes by filling in **Handout 3-1**:
“Graphic Organizer: The Good Ol’ Days with Mrs. MacLeod.”
(I)

In small groups, discuss Mrs. MacLeod’s description and view
of the past based on the teacher’s questions. (II)

Review the video to focus on the way the interviewer conducts
the interview. Record this information. (I)

Teacher Notes and References

Handout 3-1: “Graphic
Organizer: The Good Ol’ Days
with Mrs. MacLeod”

Resource Video: *Mrs. MacLeod: The Good
Ol’ Days*



A copy of this video can be
obtained on the Manitoba
Education, Citizenship and
Youth website at

<[www.edu.gov.mb.ca/ks4/cur/diversity/eal/
senior4/index.html](http://www.edu.gov.mb.ca/ks4/cur/diversity/eal/senior4/index.html)>.



Appendix 13: Preparing
Interview Questions: A
Student’s Guide

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 2.3.1 Use the structures and language features...

SLO 2.3.2 Demonstrate increasing awareness of... rhetorical forms...

SLO 2.4 Use the steps of the writing process...

SLO 4.3 Use clear and respectful language...

SLO 4.4 Manage group action...

SLO 4.7 Use the English language to participate in community...

SLO 6.1.1 Use advanced organization...

SLO 6.1.2 Use organizational planning...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.4 Use note taking...

SLO 6.2.10 Use translation...

SLO 6.3.1 Use questioning for clarification...

Instructional and Learning Sequence

Final Step (listening, speaking, reading writing, translating): Have students find an octogenarian or a nonagenarian to interview, using Mrs. MacLeod's interview as a model and the questions they prepared in Step 3.

The interview should be done with a person who speaks the student's first language. It should last about 10 minutes, with the student taking point-form notes during the interview. Encourage students to get permission to audiotape or videotape the interviews. Once the information is gathered, each student will use it to write a short report.

- The report should include three direct quotations from the interviewee.
- Students must use a variety of reporting verbs.
- The reports will be shared with at least one classmate for peer editing and evaluation before they are handed in for assessment.

Language Features**Structures**

Reporting verbs: stated, reported, suggested, mentioned

Discourse Features

quotation integration

note-taking symbols

Academic Language Functions

questioning, clarifying, summarizing, restating, and reporting

Roundup Suggestions

1. Have students write a thank-you note (in their first language) to the person they interviewed.
2. Have students research one prediction that was written in the past about the future. These may be predictions that have or have not come true.

Language Features**Discourse Features**

format of a thank-you letter

Student Learning Tasks**Teacher Notes and References**

Decide on the format you want the students to use for their report beforehand.

Find an octogenarian or a nonagenarian to interview.

- a) Use the questions developed in Step 3. Take point-form notes.
- b) Write a short report. (I)
- c) Share the report with at least one classmate for peer editing. (P)

Write a thank-you note to the person you interviewed. (I)

Research one prediction written in the past about the future. (I)



Graphic Organizer:
The Good Ol' Days with Mrs. MacLeod

Take point-form notes as you watch and listen to this video. Decide which important points to record under each heading.

When you are finished, compare your notes with a partner. Come to a consensus on the most important points. Redo your notes to reflect this.

Topic	Response
1. School	
2. Travel	
3. Leisure time activities	
4. Meeting places	
5. Modes of communication	
6. Food and its storage	
7. What we've lost from the past in today's world	
8. Technology and advances that would have been helpful in the past	





Topic 2 Inventions

(1–2 lessons)

This lesson requires students to search for information on the Internet, work in a group to reach consensus, rank items according to importance and justify their decision, examine the structure of an encyclopedia entry, practise note taking and reconstruction of text, practise analogies, read a challenging text for the main ideas, and discuss personal opinions and evaluations.

Optional experiences encourage listening skills and representing information for different audiences.

Outcomes

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.1.3 Use developing control of grammatical features...

SLO 4.1 Use language to encourage...

SLO 4.2 Communicate effectively to work with others...

SLO 6.2.7 Use elaboration...

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 3.2 Develop and implement a plan for researching...

SLO 1.5 Examine and interpret various visual media...

SLO 5.1 Identify common themes and symbols...

SLO 5.2 Analyze and use the appropriate level of formality...

SLO 5.3 Analyze ways in which language and text affect ... contemporary culture...

SLO 6.1.5 Use selective attention...

SLO 6.2.4 Use note taking...

Instructional and Learning Sequence**Sequence 1****Activation**

Have students respond to the following questions in their journals: "What does "technology" mean to you? What did it mean to your parents? What did it mean 200 years ago?"

Have students share their responses. How would you like to live with the technology of the past? (Make reference to the video interview with Mrs. MacLeod.) What are the positive and negative features of technology?

Language Features**Vocabulary**

names of technology

fashion (verb), manipulate

Academic Language Functions

expressing opinion, defining, retelling information

Activity

Have students search the Internet with a partner to answer a set of questions about great inventions, using **Handout 3-2: "Great Inventions"** or teacher-prepared questions. Include inventions from students' home cultures, if possible.

Language Features**Vocabulary**

names of inventions

Structures

question form (review)

Academic Language Functions

framing effective search items

Student Learning Tasks

Respond to given questions in a journal. (I)

Share responses and discuss. (C)

Discuss what causes technology to change. (C)

Search the Internet with a partner to answer a set of teacher-prepared questions. (P)

Teacher Notes and References

"Technology may be defined as the process by which human beings fashion tools and machines to change, manipulate, and control their environment."
(*Britannica Concise Encyclopaedia*)



Use the Internet (possible search terms: "great inventions" "invention timeline").

OR

Use reference books or posters of important inventions.

Handout 3-2: "Great Inventions" This is a sample that may be used as is, or as a guide for a teacher-created set of questions. Students should be provided with at least 10 questions.

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.7 Evaluate a given text...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 6.1.2 Use organizational planning...

SLO 6.1.3 Use directed attention...

SLO 6.2.7 Use elaboration...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.3.1 Use questioning for clarification...

Instructional and Learning Sequence

Have students brainstorm in small groups to identify and rank in importance the 10 most important technological breakthroughs, discoveries, or inventions in the last 100 years.

Groups should come to a consensus as far as possible and justify choices. Share and discuss responses. Record answers on board. Discuss and add to the list any other important inventions. Note any items that are everyday items (like "zipper") and discuss the contribution of "small inventions."

Language Features**Discourse Features**

Expressions for clarification: "What do you mean...?"
"Could you explain?"

Academic Language Functions

volunteering an answer, asking for more details, comparing, expressing an opinion

Student Learning Tasks

Brainstorm in small groups to identify and rank in importance the 10 most important technological breakthroughs, discoveries, or inventions in the last 100 years. (B)

Discuss responses and add to the list of important inventions. (C)

Teacher Notes and References

Large newsprint sheets and markers (teacher-provided)

Outcomes	Instructional and Learning Sequence
SLO 1.1 Engage with increasingly difficult oral and/or visual texts... SLO 1.4 Show awareness of organizational patterns... SLO 6.1.5 Use selective attention... SLO 6.1.6 Use self-monitoring to check... SLO 6.1.7 Use problem identification... SLO 6.2.2 Use repetition to imitate a language model... SLO 6.2.5 Use deduction and induction...	Introduction Discuss with the students the format of encyclopedia entries. a) Have students read the jumbled entry (Handout 3-3: "Technology (Student Version)") and number the sentences in a logical sequence. Check answers together, using Handout 3-4: "Technology; Britannica Concise Article (Teacher Version)," and ask students what clues they used. Did knowing the likely organizational structure help? (See Teacher Notes and References column.) b) Using Handout 3-4: "Technology; Britannica Concise Article (Teacher Version)," the reconstructed reading, ask students to answer the following questions: 1. What is the difference between technology and science? 2. How old is technology? 3. What is the difference in the use of the word "accelerated" in sentences c) and d)? 4. Find a word or phrase that means a) the use of one thing instead of another. (the substitution of x for y). What is the verb form of this expression? (to substitute x for y) 5. Find two verb phrases that mean "to be about (something)." (is concerned with, focuses on) 6. Find one word that introduces a contrast. (whereas) 7. Find a phrase that lets you specify exactly what a more general term includes. (in terms of) Language Features Vocabulary encyclopedia, breakthrough, genome, endeavour, substitution, Industrial Revolution, manipulate, whereas, in terms of names of inventions and technological devices Discourse Features definition patterns description

Student Learning Tasks

- a) Read the jumbled entry (**Handout 3-3: "Technology (Student Version)"**) and number the sentences in a logical sequence. (I)
- b) Answer seven questions using **Handout 3-4: "Technology; Britannica Concise Article (Teacher Version)." (I)**

Teacher Notes and References

Handout 3-3: "Technology (Student Version)"

Handout 3-4: "Technology; Britannica Concise Article (Teacher Version)"



A formal definition sentence usually states the term, then the class to which the term belongs, followed by the characteristics that distinguish the term from other members in its class.

For example: "Technology (term) is the application of knowledge (class) to the practical aims of human life... (distinguishing details)."

Outcomes	Instructional and Learning Sequence			
SLO 1.2 Respond to texts with increasing independence... SLO 1.4 Show an awareness of organizational patterns... SLO 2.1 Show sufficient control over linguistic structures... SLO 6.2.4 Use note taking... SLO 6.2.7 Use elaboration...	Optional Have students write sentences of their own, using one or more of the expressions used in Handout 3-3: "Technology: Britannica Concise Article (Teacher Version)." Optional: Dictation Take back copies of the reading. Write new vocabulary on the board. Read the text once, as a lecture, with students taking notes. Then students each write their own paragraph from their notes, compare their work with a partner, and revise as necessary. Compare with original, paying attention to organization and structure words. <table border="1"> <tr> <td rowspan="2">Language Features</td> <td>Discourse Features</td> </tr> <tr> <td>organizational markers (review)</td> </tr> </table> Discussion Ask students: How does technology make your life easier? What are the disadvantages of technology in your life? Journal For a 24-hour period, record everything you use, consume, or encounter that has been influenced by science and technology. What would your life be without them? Assessment Evaluation of reconstructed paragraphs (do they have the main ideas, not necessarily exact words?)	Language Features	Discourse Features	organizational markers (review)
Language Features	Discourse Features			
	organizational markers (review)			

Student Learning Tasks**Teacher Notes and References**

Write sentences using one or more of the expressions used in **Handout 3-3: "Technology: Britannica Concise Article (Teacher Version)."** (I)

OR

Write your own paragraph from your notes. Compare your work with a partner and revise. (I) (P)

Assessment

Evaluation of reconstructed paragraphs (do they have the main ideas, not necessarily the exact words?)

How does technology make your life easier? What are the disadvantages of technology in your life?

For a 24-hour period, record in a journal everything you used, consumed, or encountered that has been influenced by science and technology, and explain what your life would be without them. (I)

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 2.1 Show sufficient control over linguistic structures...

Instructional and Learning Sequence**Sequence 2**

Where do scientists get their ideas? Many inventions have come from mimicking nature.

Activation

- a) Using visuals of the objects and animal involved, ask students to respond to the following prompts in their journals: How is a plane like a bird? How is an army tank like an armadillo? Flippers like webbed feet? (List several.) Include pearl farm and oysters, suction cups, and gecko feet. Develop vocabulary as necessary.
- b) After a minute or two, share responses.
- c) Then discuss as a class: "Why do you think technology often imitates nature?"

Language Features**Vocabulary**

oyster, pearl, suction cups, gecko, armadillo, flipper, webbed

Discourse Features

comparison

Student Learning Tasks**Teacher Notes and References****Journal**

a) Respond to the prompts provided by the teacher. (I)

b) Share responses (6)

c) Discuss (C)



Visuals of animals and objects referred to, including oyster, pearl, suction cups, gecko (teacher-provided)

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 1.6 Interpret a range of texts...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 6.23 Use grouping of items to classify...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Pre-reading

Ask students about the movie/comic book superhero "Spider-man." Who was Peter Parker? Define "alter ego." Who was his alter ego? What animal abilities did Peter Parker have?

Read together "Peter Parker's Alter Ego." (The first half of the article is enough.)

Answer the following questions:

1. What is "gecko tape"?
2. What could a person do with gecko tape?
3. Why is a gecko able to stick to surfaces?
4. What are "van der Waals" forces?
5. Sort the words into three groups of two words that are close in meaning: pliable, adhesive, negligible, sticky, flexible, slight.
6. How did scientists first try to make gecko tape? How did they change it?
7. Is the tape ready to sell to the public?
8. Where did the researchers describe their work? How did they illustrate it?

Discussion

How could gecko tape be used in the real world?

As a class, brainstorm animal adaptations that would be good to have. How could scientists mimic these? Are there any disadvantages to these?

Language Features

Vocabulary

alter ego, physicist, lizard, gecko, mimic, adhesive, slickest, tape, absorbed molecules, slight, attraction, figure (v), negligible, sole, capillary interaction, sticky, replicate, fabricate, pyramid, micron, attached, flexible, pliable, cycles, published, abalone, nacre, magnificent, composite, matrix, inorganic, calcium carbonate, elastic, rubbery, mortar polymer, deceptively simple, alternately, reservoirs, polymer, layer by layer, armor, "down side"

Structures

simple past tense and pronunciation of endings

Discourse Features

expressions of possibility

Academic Language Functions

hypothesizes

Student Learning Tasks

Answer questions about Spider-man. (C)

Together, read and answer questions about "Peter Parker's Alter Ego." (C)

Discuss: How could gecko tape be used in the real world? (C)

Brainstorm for animal adaptations that would be good to have. (C)

Teacher Notes and References

Internet Resource: "Peter Parker's Alter Ego"—to access, go to

<www.nytimes.com/learning/teachers/lessons/archive.html>. Type in the search box "Peter Parker's Alter Ego." The lesson "Technology Twins" will come up. (At the top right-hand side of the page, you will see the heading "Related Article." Click on this to get the article.

This article describes two amazing products that scientists have developed by imitating nature.

Optional Internet Resources:

"Tokay Gecko" at:

<www.bbc.co.uk/nature/wildfacts/factfiles/476.shtm>

"Gecko Tape" (article and one-minute video) at: <www.sciencentral.com/articles/view.php3?article_id=218392449>



A good explanation of "van der Waals" forces is at:

<www.chemguide.co.uk/atoms/bonding/vdw.html>.

Outcomes	Instructional and Learning Sequence				
SLO 2.1 Show sufficient control over linguistic structures... SLO 2.2 Use several visual techniques... SLO 2.4 Use the steps of the writing process... SLO 3.2 Develop and implement a plan for researching... SLO 5.4 Show understanding of the effect of cultural background... SLO 5.7 Select and present ideas ...keeping in mind the intended audience. SLO 6.1.1 Use advanced organization... SLO 6.1.7 Use problem identification... SLO 6.2.1 Use resourcing to access... SLO 6.2.8 Use imagery in the form of mental or actual pictures... SLO 6.2.9 Use summarization... SLO 6.2.13 Use recombination...	Optional 1. Ask students to research van der Waals forces. Imagine you are a gecko teacher explaining to a class of young geckos how their feet work. Write your explanation, keeping in mind that your audience is young and not technically minded. 2. Imagine you are conducting a marketing campaign for gecko tape. Design the packaging, the brand name, the features you will emphasize, and the demonstrations you will use. Draw a storyboard for a 30-second commercial for the product. 3. Create a "How It Works" poster illustrating another successful technological adaptation of an aspect of nature. Include a labelled diagram and a brief explanation of the adaptation. <table border="1"> <thead> <tr> <th>Language Features</th> <th>Language Features</th> </tr> </thead> <tbody> <tr> <td></td> <td>Review various features used earlier in the lesson.</td> </tr> </tbody> </table>	Language Features	Language Features		Review various features used earlier in the lesson.
Language Features	Language Features				
	Review various features used earlier in the lesson.				

Student Learning Tasks

1. Research van der Waals forces and write an explanation. (I)
2. Design the packaging, the brand name, the features and demonstrations to be used. Draw a storyboard for a 30-second commercial for the product. (I)
3. Create a "How It Works" poster. (I)

Teacher Notes and References**Optional Internet Resource:**

The Official Rube Goldberg

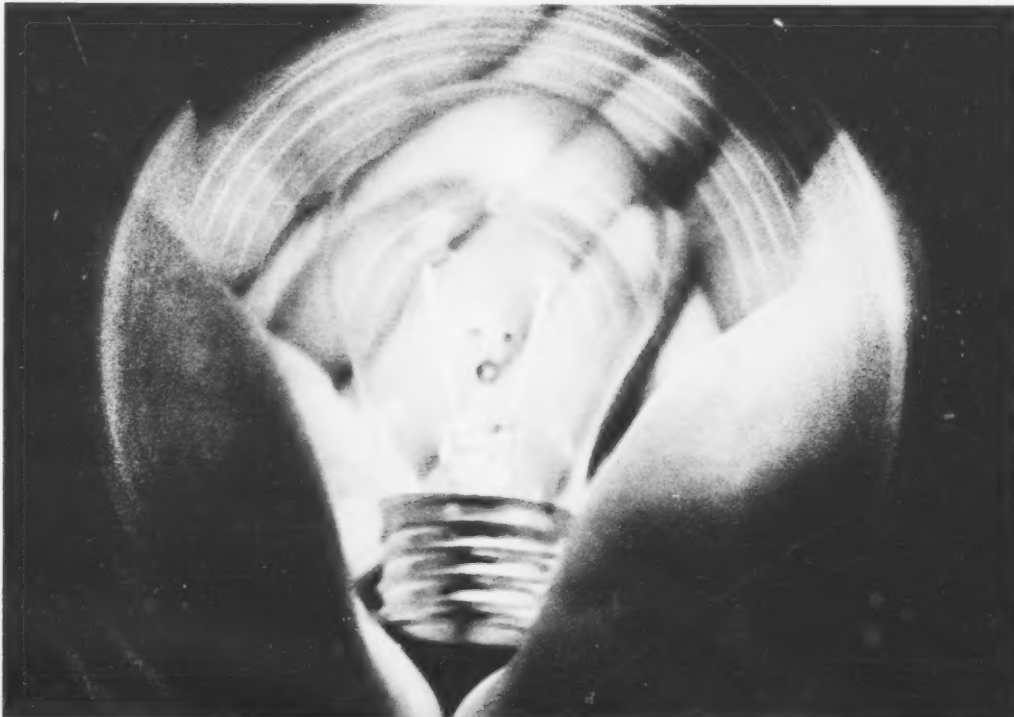
Website at:

<www.rubegoldberg.com/index.html>



Great Inventions

1. Who devised the calendar we use today?
2. What is the oldest known use of the wheel?
3. What company invented modern toothpaste?
4. When and where was the first use of swimming pools?
5. Where was paper first invented? When was it used in Europe?
6. When was the first working pair of eyeglasses made?
7. When and where did the oldest known counting board (abacus) come from?
8. When and for whom was the first flush toilet invented?
9. When was the first working bicycle invented?
10. Why was the zipper invented?
11. What was the first plastic called, and what was the problem with it?
12. How were self-stick notes invented?





Technology (Student Version)

Read this jumbled encyclopedia entry and number the sentences in the correct order.

Technology

- a) Whereas science is concerned with how and why things happen, technology focuses on making things happen.
- b) Technology includes the use of materials, tools, techniques, and sources of power to make life easier or more pleasant and work more productive.
- c) It accelerated with the Industrial Revolution and the substitution of machines for animal and human labour.
- d) Accelerated technological development has also had costs, in terms of air and water pollution and other undesirable environmental effects.
- e) Technology began to influence human endeavour as soon as people began using tools.
- f) Application of knowledge to the practical aims of human life or to changing and manipulating the human environment.

—*Britannica Concise Encyclopaedia*, 2003.





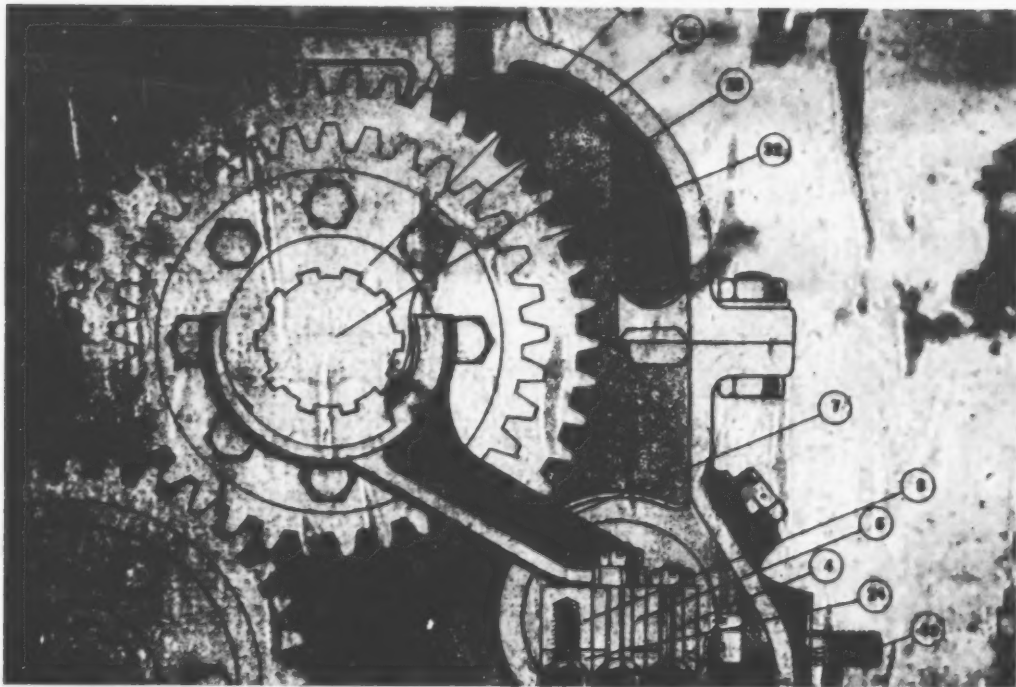
Technology: Britannica Concise Article (Teacher Version)

Technology:

Application of knowledge to the practical aims of human life or to changing and manipulating the human environment.

Technology includes the use of materials, tools, techniques, and sources of power to make life easier or more pleasant and work more productive. Whereas science is concerned with how and why things happen, technology focuses on making things happen. Technology began to influence human endeavour as soon as people began using tools. It accelerated with the Industrial Revolution and the substitution of machines for animal and human labour. Accelerated technological development has also had costs, in terms of air and water pollution and other undesirable environmental effects.

—Britannica Concise Encyclopaedia, 2003.





Topic 3
The Information Age

(2 lessons)

This lesson introduces students to ethical considerations around technology. They will develop language for discussing the issues, use graphic organizers, analyze a textbook selection, read to determine viewpoints, and write a scenario. Students will engage in discussions of opinions.

Outcomes	Instructional and Learning Sequence				
SLO 1.3 Develop and express a personal position in a variety of ways... SLO 2.1 Show sufficient control over linguistic structures... SLO 2.2 Use several visual techniques... SLO 4.1 Use language to encourage... SLO 4.6 Respond to and critique a variety of individual perspectives... SLO 6.2.7 Use elaboration... SLO 6.2.8 Use imagery in the form of mental or actual pictures... SLO 6.3.2 Use co-operation...	Sequence 1 Activation Ask students to list the technologies that they use that their parents or grandparents (or the woman in the earlier video) didn't have. How have these changed the way people live and think? OR Use pictures of the latest personal technologies; let students describe which ones they use and how they use them. In small groups or pairs have students complete the following: 1. Discuss the following question: If they went to an island for a year, what one technological device would they want to take with them? (Elaborate as desired.) 2. Make a concept map of the positive and negative consequences of the new technologies. 3. Display the maps and discuss how the students decided if a consequence was positive or negative. How are "positive or negative" the same as/different from "good or bad"? <table border="1"> <tr> <th>Language Features</th><th>Discourse Features</th></tr> <tr> <td></td><td> follow-up questions using the "5 Ws and H" adding details (using two or more sentences, using words like "because" or "so that") </td></tr> </table>	Language Features	Discourse Features		follow-up questions using the "5 Ws and H" adding details (using two or more sentences, using words like "because" or "so that")
Language Features	Discourse Features				
	follow-up questions using the "5 Ws and H" adding details (using two or more sentences, using words like "because" or "so that")				

Student Learning Tasks**Discussion**

List the technologies you use that your parents or grandparents (or the woman in the earlier video) didn't have. (C)

OR

Describe the latest personal technologies you use and how you use them. (C)

1. Discuss the question posed by the teacher. (P) (G)
2. Make a concept map of the positive and negative consequences of the new technologies. (P) (G)
3. Display the maps and discuss how you decided if a consequence was positive or negative. (P) (G)

Teacher Notes and References

Internet Resource: "Ethics in Computing," suggested background reading, at:

<http://courses.ncsu.edu:8020/classes-a/computer_ethics/>

Concept map (See Teaching and Learning EAL in the Senior Years section.)



This lesson encourages students to consider the ethical implications of technology, especially information technology. It is not designed to promote a particular ethic, but to make students aware of the types of ethical questions, and of the specific application to North American concepts of intellectual ownership and academic honesty.

Outcomes	Instructional and Learning Sequence									
SLO 6.2.12 Use inferencing to guess the meanings... SLO 2.2 Use several visual techniques... SLO 4.2 Communicate effectively to work with others... SLO 6.2.5 Use deduction and induction... SLO 6.2.8 Use imagery in the form of mental or actual pictures...	Introduce the idea of worldview (see Language Features). List several simply worded statements about the use of information technology for an agree/disagree preview exercise (e.g., "People who copy software and share it with their friends are not doing anything wrong.") <table border="1"> <tr> <td rowspan="2">Language Features</td> <td>Vocabulary</td> </tr> <tr> <td>worldview—note that "worldview" is a compound noun that may not appear in students' dictionaries.</td> </tr> <tr> <td></td> <td>Structures</td> </tr> <tr> <td></td> <td>modals of obligation (should, must, and ought to)</td> </tr> <tr> <td></td> <td>gerunds and infinitives</td> </tr> </table> Let students predict the meaning of "worldview" by looking at the components, and then give a dictionary definition ("1. The overall perspective from which one sees and interprets the world. 2. A collection of beliefs about life and the universe held by an individual or a group." –<i>The American Heritage Dictionary of the English Language</i>, 2000). Ethics derive from our worldview. A person's worldview includes the following components: • Ethics: the moral principles about right and wrong behaviour that someone believes in; the study of questions about what is morally right and wrong. • Laws: a system of rules that a society or government develops in order to deal with crime, business agreements, and social relationships. • Traditions: customs or beliefs that have existed for a long time. • Morals: principles and beliefs concerning right and wrong behaviour. Using Handout 3-5: "Sample Concept Attainment Chart," ask students to sort the statements into these categories: worldview, ethics, and laws. Encourage students to provide a rationale for the placement of each statement.	Language Features	Vocabulary	worldview—note that "worldview" is a compound noun that may not appear in students' dictionaries.		Structures		modals of obligation (should, must, and ought to)		gerunds and infinitives
Language Features	Vocabulary									
	worldview—note that "worldview" is a compound noun that may not appear in students' dictionaries.									
	Structures									
	modals of obligation (should, must, and ought to)									
	gerunds and infinitives									

Student Learning Tasks

The teacher lists several statements and asks whether you agree or disagree.

Predict the meaning of "worldview" by looking at the components of the word. (I)

Discuss and sort the statements into three categories: worldview, ethics, and laws.

Teacher Notes and References**Handout 3-5: "Sample Concept Attainment Chart"**

Students should do this part of the lesson without using their dictionaries unless instructed, in order to encourage them to build the concept behind the words.

You can relate worldview back to Module 2, Topic 1, where the worldviews of Aboriginal and modern industrial cultures were compared.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.6 Interpret a range of texts...

SLO 4.1 Use language to encourage...

SLO 4.2 Communicate effectively to work with others...

SLO 6.1.1 Use advanced organization...

SLO 6.1.5 Use selective attention...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Distribute **Handout 3-6**: "Technology, Information, and Worldview."

- Using preview techniques, students predict the contents of the selection. (This could link to the earlier discussion of positive and negative effects of technology.)
- Using guiding questions (see Student Learning Tasks), have students read the first two paragraphs independently or with a partner, and underline the words that introduce the topic.
- Students continue reading up to the last two paragraphs, underlining each new technology, placing a plus or minus sign over each positive or negative effect mentioned, and placing a question mark over each idea they are not sure about.
Ask: "What is the main technique used throughout the selection?" (questions) "Why are they not answered in the reading?" (designed to stimulate thought)
- As a class, list the new technologies along with their potential benefits and dangers. (evaluation of reading comprehension)

Which problems are "new" problems and which are old ones in a new setting?

Read the last two paragraphs aloud and ask students: "What phrase connects these paragraphs to the previous discussion?" "What words signal the next topic?"

- In small groups, students brainstorm a list of other ethical or moral questions that can be raised in one of the following areas (assigned or chosen): commerce, privacy risks, computer abuse, (free) speech issues, social justice issues, intellectual ownership. Lists of questions should be saved for later use.

Language Features

Vocabulary

airwaves, armchair, blossom, bullies, censor, cradle, criminals, cyber, cyberspace, dignity, dilemmas, disgruntled, disrupt, dissemination, enticed, filter, Greek, hackers, inescapably, innocent, landline, legitimate, lust, misuse, Pandora's box, pornography, privacy, racist, responsibly, romances, sabotage, spy, stalkers, surveillance, taunted, territory, terrorists, unmarked, usage, victims, viruses, vital, worldview

From AWL: access, accuracy, balance, boundaries, briefly, broadcast, enforce, ethical, ethics, exposed, generation, greed, investment, monitor, networks, nevertheless, pose, potential, principles, restriction, revolution, sacred, trace, unsuspecting

Structures

question forms, modals of obligation, and hypothetical conditional

Discourse Features

rhetorical questions

Discourse markers: transitions, e.g., "As you have seen," "We will now consider," "We will first look briefly"

Student Learning Tasks

- a) Use preview techniques to predict the contents of **Handout 3-2**: "Technology, Information, and Worldview." (I)
- b) Read the first two paragraphs and underline the words that introduce the topic.

Read to find answers to questions posed by the teacher. (I) or (P)

Possible questions:

- What is the purpose of the selection? (*to introduce a new topic, the ethical problems of technology*)
 - What techniques are used in the first paragraph? (*examples, questions*)
 - Who is the intended audience? (*this generation*)
 - What is the effect of using the second person pronoun "you" and the first person "we" in the second paragraph? (*gets attention by targeting the audience, and then shows that this is a topic that applies to all*)
- c) Continue to read up to the last two paragraphs and answer questions.
- d) Contribute to a list of new technologies and their potential benefits and dangers. (C)
- e) Brainstorm a list of other ethical or moral questions. (G)
- Note: Save this list for later use.

Teacher Notes and References



Handout 3-6: "Technology, Information, and Worldview"

Handout 3-7: "Zippy Scenarios for Teaching Internet Ethics"



This simulated excerpt from a textbook used in an introductory ethics course comes from a chapter about

media and technology. The chapter begins with a discussion of the ways broadcast media influence young people's values. This reading focuses on vocabulary and background for discussing ethics and technology. The reference to "Pandora's box" may need explanation.

Optional: Teachers who feel comfortable with computers may want to adapt ideas from "Zippy Scenarios for Internet Ethics" for further class discussion, or students can read a model, then write their own to exchange for group discussion.

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 4.2 Communicate effectively to work with others...

SLO 6.1.5 Use selective attention...

SLO 6.2.7 Use elaboration...

SLO 6.2.9 Use summarization...

Instructional and Learning Sequence

Sequence 3

Introduction

- Have students free-write briefly on the topic of "stealing." What is it? Why do people steal? Have several students read their definitions.
- Discuss whether the computer and Internet have changed the nature of theft.
- Read **Handout 3-8: "Ethical Issues of Information Production"** and identify three different traditions about the ownership of information. Use phrases for attributing viewpoints.
- Discussion: Reread the last sentence of the first paragraph. How could a person who has grown up in one culture/tradition have trouble when working in another?

Language Features

Vocabulary

concerning, with regard to, be related to, integrity, (author)-ship, copyright, original, emulation, aspects

"According to..."

"The paragraph states that..."

Structures

use of parentheses

his/her

Discourse Features

attributing expressions, e.g., "according to"; "the paragraph states"

Academic Language Functions

defining and citing

Assessment

Create a comprehension check. (See Teacher Notes and References.)

Student Learning Tasks

- a) Free-write briefly on the topic of "stealing." What is it? Why do people steal? (I)
- b) Discuss whether the computer and Internet have changed the nature of theft. (C)
- c) Listen as **Handout 3-8**: "Ethical Issues of Information Production" is read and identify three different traditions about the ownership of information. (I)
- d) Discussion (C)

Teacher Notes and References**Comprehension Check:**

Teacher presents several true/false statements based on the passage. (teacher-created)

Handout 3-8: "Ethical Issues of Information Production"

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.4 Show an awareness of organizational patterns...

SLO 1.6 Interpret a range of texts...

SLO 1.7 Evaluate a given text...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 4.2 Communicate effectively to work with others...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.2.7 Use elaboration...

SLO 6.3.1 Use questioning for clarification...

SLO 6.3.2 Use co-operation...

SLO 5.1 Identify common themes and symbols...

SLO 6.2.1 Use resourcing to access...

Instructional and Learning Sequence

Optional

Distribute **Handout 3-9: "The Ten Commandments of Computer Ethics."**

Introduce by explaining that the Ten Commandments are a set of principles that have origins in Jewish religious laws about behaviour, and that are also respected by several other religions. They are easy to remember because they are written in the same short, simple pattern. Many other guidelines follow this pattern.

However, the brevity of the code means that not every situation may be covered, and some items may be more important than others.

- a) Students may share and compare lists of principles for right living from their cultural backgrounds.

This set of commandments for computer ethics is modelled on the Ten Commandments. Analyze the list for audience, purpose, and context.

- b) Assign each student one commandment on the list. Have students give an example of the commandment and state whether they agree or disagree. Are their decisions based on ethics or laws?
- c) In small groups, have students rank the commandments from most important to least important. Justify the ranking. Compare results with another group.

Language Features

Vocabulary

commandment, "Thou shalt not" snoop, "bear false witness" (lie about someone), interfere, proprietary software, authorization, compensation, appropriate (verb) intellectual output, social consequences, consideration

Academic Language Functions

expression and soliciting opinions

Optional

- a) Refer students to the website of the University of Manitoba's Student Resource Centre to read the brochure on what is considered academic honesty in the North American context, or to take the "Test Your Integrity I.Q." quiz.
- b) Discuss any differences in approach from students' own cultures.

Language Features

Vocabulary

plagiarism, documentation

Student Learning Tasks**Optional Task:**

- a) Share and compare lists of principles for right living from your cultural backgrounds. (I)
- b) Given one commandment, give an example of the commandment and state whether you agree or disagree. (I)
- c) In small groups, rank the commandments. from most important to least important. Justify the ranking. Compare results with another group. (G)

- a) Read the brochure or take the quiz. (I)
- b) Discuss differences in the approach to plagiarism. (C)

Teacher Notes and References**Resources**

Handout 3-9: "The Ten Commandments of Computer Ethics"



Internet Resource: "Test Your Integrity I.Q." quiz at:
<http://umanitoba.ca/student/resource/student_advocacy/academic_honesty_quiz.shtml>



This is a good opportunity to prepare students for North American university expectations. This may warrant further discussion, especially regarding documentation and "helping a friend."

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 2.4 Use the steps of the writing process...

SLO 5.1 Identify common themes and symbols...

SLO 6.1.1 Use advanced organization...

SLO 6.1.2 Use organizational planning...

SLO 6.1.4 Use functional planning...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.11 Use transfer...

Instructional and Learning Sequence

Writing

Have students choose one of the questions from the previously brainstormed lists of possible issues in computer ethics.

- a) Write a short scenario. The first paragraph describes the situation and the people affected by it. The second and third explain the ethical dilemma from the perspective of each person affected, and predicts what each would do. The final paragraph should describe the student's own thinking on this issue, and explain what influences his or her decision.
- b) Have students share their scenarios and discuss other possible responses.

Language Features

Discourse Features

connectors between paragraphs

Academic Language Functions

expressing point of view

analyzing

Teacher Notes and References

- a) Choose one of the questions from the previously brainstormed lists of possible issues in computer ethics, and write a short scenario to illustrate it. (1)
- b) Share your scenario and discuss other possible responses. (1)



Use the writing process to plan, organize, write a first draft, edit, and produce a polished version.

Sample Concept Attainment Chart

These are possible statements to separate the concepts. Note that the teacher is not agreeing or disagreeing with any statement, merely giving an example of what some people may think.

<i>Worldview</i>	<i>Ethics</i>	<i>Laws</i>
The greatest value in life is friendship.	You should always help your friend.	Taking something from a store without paying for it is against the law and will be punished.
Most human beings are good and trustworthy.	It is wrong to steal.	You must stand when the teacher enters the room.
It is important to respect authority.	It's okay to copy software and share it with a friend.	You must stop for a red light.
This life is all there is.	I should be able to say what I want on the Internet.	Writing a newspaper article that encourages people to hate another race is against the law and will be punished.
Truth changes with the times.	It's okay for the government to listen to suspected criminals' phone conversations.	Entering someone's office without permission will be punished.
Humans are just one type of intelligent animal.	It's okay to sell information about my customers to another company.	You cannot use animals for experiments that will cause pain.
There is a personal God.	I won't buy products made by companies who treat their workers badly.	
People can't change their fate.		
It is important to be honest.		



Technology, Information, and Worldview

Why would computer science majors in some Canadian universities be required to take an ethics course? How have the thinking and values of your generation been shaped by the technology that surrounds it from the cradle to the grave? You are the first generation to grow up with television and computers as a way of life. Information technology has developed and spread around the world so rapidly that it is easier in many places to use a cell phone than a landline. You are able to invite cultures, ideas, customs, fashions, and businesses from all over the world into your home. You know the instant a disaster happens and can watch a war from your armchair. The changing technological world is influencing your worldview in ways unlike previous generations have experienced.

Both the broadcast media and information technology have brought immense benefits to our lives. However, both carry the potential for misuse and pose many ethical and moral dilemmas, some familiar and others new to this age.

How should we respond to individuals who steal credit card numbers and bank P.I.N. numbers in order to gain access to unsuspecting victims' funds? Cameras that catch criminals in that act can also spy on innocent citizens. In a time of increased security, governments may use electronic surveillance to protect against terrorists, or industry may use it to spy on the competition. Romances may blossom on the Internet, but cyberstalkers also find their victims. How do we protect the vital networks that run our power supplies, hospitals, and many essential services from viruses and sabotage by a disgruntled employee or hackers who disrupt systems for the challenge of it?

Questions of privacy, ownership and accuracy must also be answered. Do you want all your health information available to potential employers? Should businesses store and sell your purchasing patterns on the Internet without your permission? Should employers monitor their employees' email and Internet usage during working hours? Should the police search someone's hard drive for records that the owner thought were deleted? When you receive email promising a share of a dead general's fortune in return for a small investment, can you believe it? Can a

musician or movie director protect their work from being "shared" by millions on the Internet? How do teachers prevent students from copying and pasting other people's work and claiming it as their own?

The unlimited, international nature of the information highway raises challenges to anyone who tries to control or censor the contents. Few national laws can apply to cyberspace, and even those that do are almost impossible to enforce because there are no boundaries. Even if we could agree on international moral standards or laws, it would be difficult to trace who sent objectionable materials.

As in the Greek story of Pandora's box, the development of instant international communication has also allowed pornography, hate messages, and racist writings to spread as easily as the sports scores or news of a revolution. Young children can be enticed into danger, taunted by bullies even in their own homes, and exposed to images and ideas that they would normally be sheltered from. A number of ethical questions about the control and use of technology must be addressed. How does the right of an individual to read or watch what he or she wants balance with the right of women, children, races, religions, and all people to be treated with dignity and respect? Will greed, lust and hatred run without restriction through the airwaves and communication lines? On the other hand, will legitimate research and dissemination of information be restricted by software that attempts to filter out objectionable material? We have travelled into new unmarked territory and do not always know the way.

In the previous chapters, we have seen that all of us—whether we belong to an organized religion or not—are inescapably influenced by the media and modern technology. We search for answers to the ethical challenges within our own worldview. However, since all of the major religions developed before modern technology, there are no clear-cut answers within their sacred writings. Nevertheless, most religious people look to the beliefs, teachings and writings of their faith for the moral principles that will guide them to act ethically and responsibly in this world of technology.

Badley, Ken. *Worldviews: The Challenge of Choice*. Irwin, 1996. Reproduced under the terms of the Access Copyright Licence Agreement (2006).



Zippy Scenarios for Teaching Internet Ethics

Describe the underlying Netiquette/ethics issue(s) in each scenario. What is your opinion of the behaviours involved? What equitable solutions can you suggest? Describe a parallel situation in which computers are NOT involved.

1. Jules has walked away from a lab computer without logging off. Trish sits down and, still logged in as Jules, sends inflammatory email messages out to a number of students and posts similar messages on the class newsgroup.
2. Lester sends email to the entire student body inviting them to a BYOB party at his house while his parents are out of town. Lester receives a message from a system administrator calling him in for a meeting with school officials. He objects because he feels that his email is his own private business.
3. Every time Abner posts a comment to a newsgroup, his posts are flamed by a group of "enemies." Abner has responded to each flame in turn, and a full-scale war is now in progress.
4. It seems like every time Melanie logs on to her account, Stanley knows about it and sends messages that cover her screen with text. At first she thinks it is funny, but now it's really starting to bother her. The messages reformat the text on her screen and, besides, it's kind of creepy the way he always knows she's logged on.
5. Sharon and Timothy are students at Big Suburban High School. They have designed a web page devoted to their favourite rock band, using their personal disk space on the schools web server. They have posted song clips, lyrics, photographs of each band member, and articles they have found in various web news sources. However, school authorities have asked them to shut down their site because of the obscene content of many of the lyrics. Sharon and Timothy object, noting that their First Amendment (free speech) rights are being violated.

Intellectual Property Issues

1. Tracy had a report to write on acid rain. She used several sources—books, magazines, newspaper articles, and a CD-ROM encyclopedia. She listed all these sources in her bibliography at the end of the report. She found the encyclopedia to be the most convenient source because she could highlight portions of the text and paste them into her word processing document.
2. Jason R. designed and posted a Star Wars website. Once the site started receiving 40,000 hits a day, he received a phone call from Lucasfilm asking him to shut it down. Jason posted excerpts of the phone conversation on his website. Lucasfilm was then flooded with angry email messages from fans who felt the company was exerting totalitarian control over products to which they felt a deep personal connection.
3. Ms. Harris received email from someone who liked the gargoyle image on the Uni High Library's web page and wanted to know if he could use it on his school library's web page. The art teacher, who created the image for the school, wrote back to him, explaining that the image belonged to the university and that, furthermore, it had special significance as the image that identifies Uni High. She thanked him for his interest, but told him that she could not grant permission for him to use it.
4. Richard asked Vicky if he could look at the essay she wrote for their history class. She told him "sure" and thought no more about it. Several days after the essays were turned in, the teacher asked her to stay after class. She showed Vicky that her essay and Richards were almost identical. She asked Vicky for an explanation.
5. Malcolm has a web page on the topic of sailboats. He has collected a truly astonishing amount of information and receives many complimentary email messages from sailing enthusiasts. He has downloaded numerous pictures and articles he finds on other websites, and is always careful to give credit by citing the original sources.

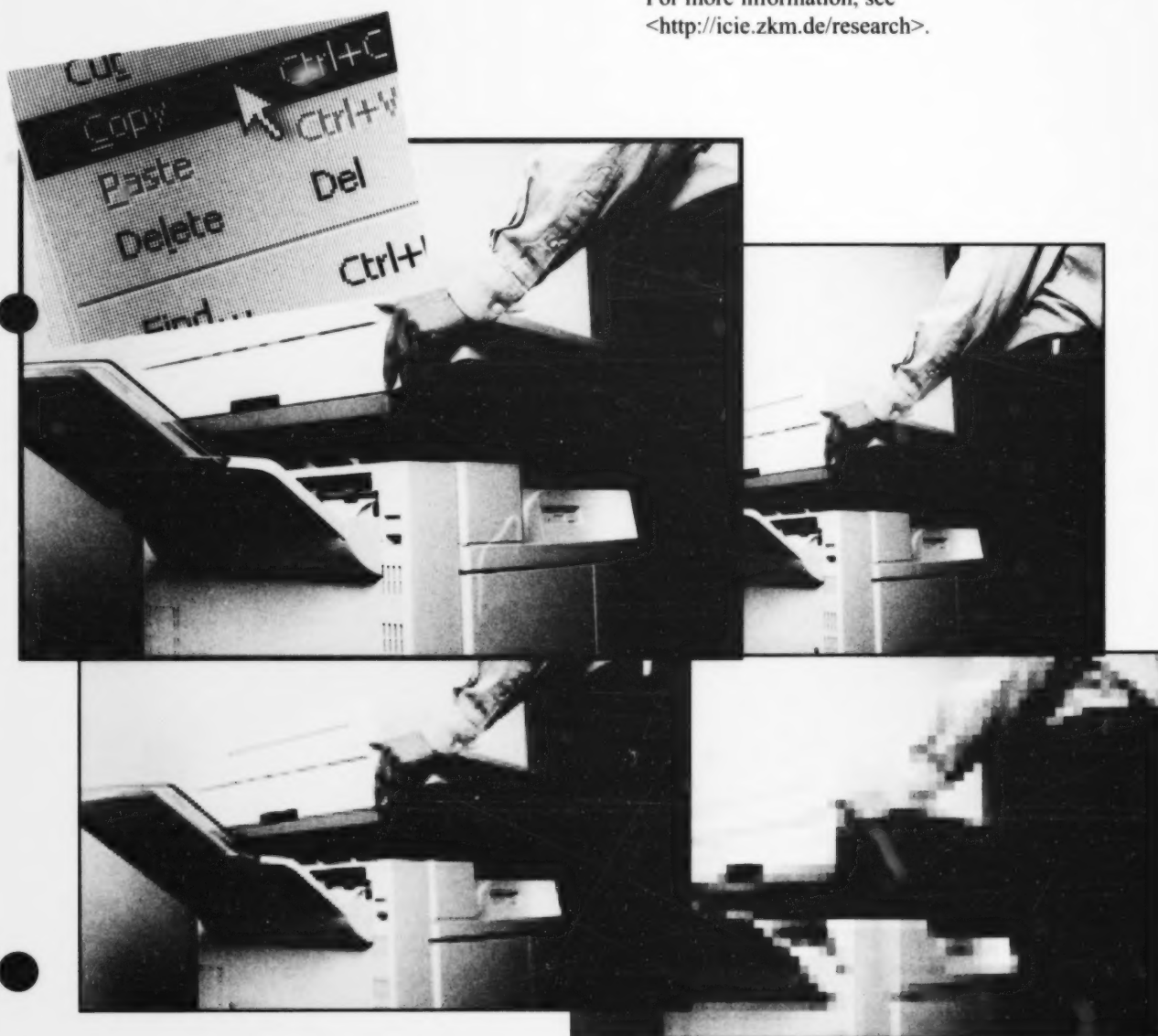


Ethical Issues of Information Production

The question concerning the protection of the intellectual property is one of the most important and difficult ethical, moral, and legal ones in the field of information production. Different traditions with regard to technologies and products have led to different protection laws in different regions of the world:

- The European tradition emphasizes the moral rights of the authors (*droit d'auteur*). These are related to the person of the author and concern the integrity and authorship of her or his work as well as her or his reputation.
- The Anglo-American tradition emphasizes the property or economic rights (copyright). These rights can be transferred. According to this tradition "original works of authorship in any tangible means of expression" (17 U.S.C. sect. 102[a]) should be protected.
- The Asian tradition(s) consider copying as a matter of emulation of the master. Conflicts arise when national and international laws and moral traditions protect different aspects of various media.

For more information, see
<<http://icie.zkm.de/research>>.





The Ten Commandments of Computer Ethics

by the **Computer Ethics Institute**

1. Thou shalt not use a computer to harm other people.
2. Thou shalt not interfere with other people's computer work.
3. Thou shalt not snoop around in other people's computer files.
4. Thou shalt not use a computer to steal.
5. Thou shalt not use a computer to bear false witness.
6. Thou shalt not copy or use proprietary software for which you have not paid.
7. Thou shalt not use other people's computer resources without authorization or proper compensation.
8. Thou shalt not appropriate other people's intellectual output.
9. Thou shalt think about the social consequences of the program you are writing or the system you are designing.
10. Thou shalt always use a computer in ways that insure consideration and respect for your fellow humans.



Copyright Computer Ethics Institute.

www.ccsr.cse.dmu.ac.uk/resources/professionalism/codes/cei_command.html.





Topic 4A

**I Think, Therefore
IM, Text Messaging:
Bane or Boon?**

(2 lessons)

911 PAW TMB
Translated:
Urgent! Parents are
watching! Text me back.

Wat RU ^ 2, DY
wana gt za?
Translated:
What are you up to? Do you want
to get a pizza?

There are two lessons in this topic. In these two lessons, students look at formal and informal writing and decide if the impact of text messaging is positive or negative by examining its uses and reading articles with different perspectives about its value and impact. The first lesson may also introduce EAL students to text messaging language in English. Some of the specific academic tasks are: making notes, using notes to explain information, working on pronunciation, comparing and contrasting, summarizing, taking

part in discussions, deducing the meaning of unknown words and word groups, recognizing implications, understanding a discussion by recognizing lexical, grammatical and discourse devices, skimming and scanning, finding relevant information, quoting and citing, paraphrasing, supporting an argument, offering evaluative comments, using appropriate spelling and punctuation, presenting information, writing a critique, using academic writing style, and planning an answer.

n D cookies of lyf, pal ur D choc1@ chips

Translated: In the cookies of life, pal, you're the chocolate chips!

Outcomes

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 2.4 Use the steps of the writing process...

SLO 5.1 Identify common themes and symbols...

SLO 5.3 Analyze ways in which language and text affect... contemporary culture.

SLO 5.4 Show understanding of the effect of cultural background...

SLO 6.1.3 Use directed attention...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.2.7 Use elaboration...

SLO 6.2.10 Use translation...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Sequence 1

I Think, Therefore IM

Activation

To connect with Mrs. MacLeod's discussion about the past, students are each given a copy of **Handout 3-10: "English Spelling is Torchur."**

- a) Choose a student or students to read the article out loud. Students will discuss the difficulties of English spelling and pronunciation. (This article may be difficult for them to read. Can they say why?) What do they think about the prediction in the article? Obviously, this prediction has not come true, but has English spelling changed in any way? In formal writing? Informal? Guide students to mention instant messaging.
- b) Discuss the language of instant messaging.
- c) Have students respond to these questions individually. Create a glossary of text messaging terms on the board. (If students do not use English text messaging, they will need the resources in the Teacher Notes and References column.) Continue by asking students: Is there a pattern in the language of text messaging? (elimination of vowels, use of phonetic spelling, one letter stands for a single word, symbols, etc.) Are these patterns similar in text messaging shorthand in your first language? What are the advantages of this form of language? (speed of communication) Would you/do you use it in school assignments? When? Is it formal or informal writing? What is the impact of this shorthand? Positives? Negatives? (Answers will vary.)

Language Features

Vocabulary

befuddle, linguists, simplification, economizing, phonetic

Idiom: be the norm

Abbreviations: text-messaging shorthand in English

Structures

Present tense: use of definite article—do not use with the expressions "text messaging" and "instant messaging"

Discourse Features

Language to express opinion: I think...; I believe...; My opinion is...

Language of discussion: to agree, disagree, interrupt, add information, summarize

(Continued on page 65)

Student Learning Tasks

Teacher Notes and References

- a) Listen or read **Handout 3-10: "English Spelling is Torchur."** (C)

- b) Discuss the language of instant messaging. (C)

Ask:

- 1 Do you use MSN or ICQ?
2. Do you instant message your friends?
3. Do you use text-messaging terms?
4. Do you text message in your first language?
5. Do you text message in English?

- c) Respond to the questions individually. (I)



Handout 3-10: "English Spelling is Torchur"

You may want to refer to one of the following websites for text messaging abbreviations:

<www.mpsmits.com/highlights/cyber_slang.shtml>

<www.newbie.org/reference/abbrev.html>

Language Features

(Continued)

Pronunciation

use of stress and intonation

word thought patterns

linkage and reduction

Specific problematic sounds: note the use of linkage in the original Descartes statement that allows for the new one used in the title of the lesson (I think, therefore I am ~ I think, therefore IM).

Outcomes	Instructional and Learning Sequence
SLO 1.1 Engage with increasingly difficult oral and/or visual texts... SLO 2.1.2 Use standard Canadian spelling... SLO 2.1.3 Use developing control of grammatical features... SLO 4.1 Use language to encourage... SLO 4.2 Communicate effectively to work with others... SLO 4.5 Experience and consider academic texts... SLO 4.6 Respond to and critique a variety of individual perspectives... SLO 5.4.2 Begin to interpret NA approaches to humour SLO 6.2.1 Use resourcing to access... SLO 6.2.3 Use grouping of items to classify... SLO 6.2.4 Use note taking... SLO 6.2.11 Use transfer... SLO 6.2.12 Use inferencing to guess the meanings... SLO 6.3.2 Use co-operation...	Text Messaging Activity Step 1. Distribute copies of Handout 3-11: "Internet Shorthand" and direct students to the article "I Think, Therefore IM" obtained from the website provided. a) Have students read the titles of both articles. The first is straightforward; the second requires background knowledge and an understanding of punning/play on words. b) Have students discuss the second title and try to make sense of it. Add background information as necessary for your students. Tell students that this title is an example of how people play with famous quotations in North America. Give them some other examples: • A convicted criminal: I think, therefore I'm damned. • A basketball star: I think, therefore I slam (dunk). • A con artist: I think, therefore I scam. • A disorganized or lazy student: I think, therefore I cram. (The play on words can be on the word "think," as well.) Can students think of any more on their own?

(continued on page 68)

Student Learning Tasks

- a) Read the titles of **Handout 3-11**: "Internet Shorthand" and the article "I Think, Therefore IM." (I)
- b) Discuss the second title. (C)

Teacher Notes and References

Handout 3-11: "Internet Shorthand"

Appendix 15: Tone Vocabulary

Reading: "I Think, Therefore IM." To access, go to <www.nytimes.com/learning/teachers/lessons/archive.html>. Type in the search box "I think, therefore IM." The lesson "generation TeXt" will come up. At the top right-hand side of the page, you will see the heading "Related Article." Click on this to get the article.



The original quotation "I think, therefore I am" is attributed to Rene Descartes, French philosopher and mathematician.

The original Latin phrase is *cogito ergo sum*.

This is an opportunity to talk about North American culture and humour.

Outcomes

Instructional and Learning Sequence

(continued)

Step 2. Group students in quads. Have them work together to read **Handout 3-11:** "Internet Shorthand" and the Internet article, "I Think, Therefore IM."

- a) They should first try to decipher the new vocabulary through use of context clues or knowledge of word families and affixes. After they have done as many as they can, they may each take an equal number of the unfamiliar words that affect their ability to understand the articles and find the meanings to share with group members.
- b) As they read the articles, ask them to answer the following:
 1. Decide what the tone of each piece is. State it in one word.
 2. Explain the attitudes of each author toward text messaging.
 3. List the words or expressions that helped you understand their attitudes.
 4. Predict why each writer has his or her specific attitude about text messaging. We know one writer is a teacher. Speculate on what the profession of the other writer might be.
 5. Discuss which author you might like better as a person and explain why.
- c) Have students share their answers with other groups.

Language
Features

Vocabulary

From "Internet Shorthand": spawned, legitimate, neologisms, arbitrary, abbreviations, distinguish, oblivious, mere, sheer ignorance, discarded, obligation, decoded, arrogantly, dignified, juvenile, propensity, reluctantly, concede, exceptions, real-time, time constraints, emoticons, acronyms, abomination, linguistic anarchy

From "I Think, Therefore IM": plagued, lingua franca, errant, abbreviating, unconsciously, nurtured, milieu, assault, arc, deprived, unrepentant, facile, passé, lingo (focus on words borrowed from other languages)

Structures

In questions: use of imperatives that are often used in academic tasks

In a discussion task: use of present and future hypothetical; use of appropriate person (first or third); use of hypothetical words and phrases (If ~ then, I think, I believe, I'm pretty sure, perhaps, maybe, probably, etc.)

Punctuation: use of commas and semicolons in Descartes' statement and in the wordplay examples

Student Learning Tasks**Teacher Notes and References**

- a) Individually find the meaning of unfamiliar words. (I)
- b) In quad groups, read **Handout 3-11: "Internet Shorthand"** to decipher the new vocabulary through the use of context clues or knowledge of word families and affixes. (II)
- c) Share your answers with other groups. (II)



Handout 3-11: "Internet Shorthand"

Outcomes	Instructional and Learning Sequence
SLO 2.1.1 Analyze and edit texts... SLO 2.1.2 Use standard Canadian spelling... SLO 2.3 Produce a variety of short and extended text forms... SLO 4.3 Use clear and respectful language... SLO 4.6 Respond to and critique a variety of individual perspectives... SLO 5.6 Evaluate texts... SLO 6.1.2 Use organizational planning... SLO 6.1.6 Use self-monitoring to check... SLO 6.2.5 Use deduction and induction... SLO 6.2.12 Use inferencing to guess the meanings... SLO 6.3.2 Use co-operation...	Step 3: Direct students' attention to the difference between formal and informal (conversational) writing discussed by both authors. Tell them you are going to give them a chance to practise each. a) Ask students to first write three to five sentences as if they were chatting to or instant messaging a friend about the following topic: "Why Having Access to the Internet Is So Important." They can use abbreviations and polite slang. Give them five minutes to do this. b) Have students answer the same question as if they were writing the first paragraph of a formal essay. They must begin with a hook, follow with connecting sentences, and end the paragraph with a thesis statement as has been taught. Give 5 to 15 minutes to do this task. c) Let pairs of students peer-edit for each other. d) Continue the discussion about text messaging. If formal writing is the usual preference in school assignments, is there any place for conversational style like text messaging? When? Will text-messaging shorthand creep into students' formal pieces and make students less proficient writers? (These discussion questions will prepare students for the next lesson.) Writing a) Have students choose one of the readings and write an email to the author, critiquing the article. (Both express strong opinions, so this can be discussed, but the "Internet Shorthand" negative piece is particularly good for discussion about bias.)

Language Features

Structures

Use of the definite article to describe the specific parts of an introduction to an essay: the hook, the connecting sentences, the thesis statement

Discourse Features

text messaging shorthand; format of an introduction – hook, connecting sentences, and thesis statement; format of an email

Expressions for discussion while peer editing: to give advice, ask questions, make positive comments, give constructive criticism, add information

Student Learning Tasks**Teacher Notes and References****Assignment**

- a) Write three to five sentences as if chatting or instant messaging about the following topic: "Why Having Access to the Internet Is So Important." (I)
- b) Answer the same question as if you were writing the first paragraph of a formal essay. (I)
- c) "Peer-edit" by following the criteria established in class. (G)
You should
 - comment on the hook (Does it create interest?)
 - comment on the connecting ideas (Do they link the hook and the thesis?)
 - comment on the thesis statement (Is it clear; does it address the topic?)
- d) Once you have finished and shared your work, continue to discuss text messaging. (G)

Writing

- a) Choose one of the readings and write an email to the author, critiquing the article. (I)



Review writing introductions and creating thesis statements.

Review how to recognize bias.

Review the format of an email.

Outcomes

SLO 2.3 Produce a variety of short and extended text forms...

SLO 5.4.2 Begin to interpret NA approaches to humour

SLO 5.6 Evaluate texts...

SLO 6.2.3 Use grouping of items to classify...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.6 Use substitution to select alternate approaches...

SLO 6.2.7 Use elaboration...

SLO 1.2 Respond to texts with increasing independence...

SLO 1.7 Evaluate a given text...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.3.1 Use the structures and language features...

SLO 3.1 Seek, organize, and synthesize information...

SLO 4.1 Use language to encourage...

SLO 5.2 Analyze and use the appropriate level of formality...

SLO 6.2.3 Use grouping of items to classify...

SLO 6.2.9 Use summarization...

SLO 6.2.11 Use transfer...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Roundup

- a) Students might like to try to create their own play on words or twist to Descartes' famous quotation. They could make up a twisted quotation for different famous characters that are familiar to them. An example for Homer Simpson might be: I think, therefore I eat doughnuts.

OR

- b) Have students make a list of text messaging shorthand that might be useful in taking notes. Use these symbols in future note-taking assignments.

Language Features

Structures

appropriate punctuation for the reworked Descartes statement

Discourse Features

useful text messaging symbols for note taking

Pronunciation

Musical device terms: rhymes, approximate rhyme

Sequence 2

Text Messaging: Bane or Boon?

Activation

Students will recall the discussion about text messaging and its uses from the previous day.

- a) Have students list the main points from the previous day's discussion:
- Text messaging is shorthand and informal.
 - Most writing in school is formal.
 - Text messaging shorthand is useful for taking notes.
 - Text messaging shorthand is not acceptable (by most) in formal writing.
 - Will text messaging shorthand affect the quality of students' formal writing?

Language Features

Discourse Features

Discourse markers: to agree, to add information, to synthesize and clarify, to question, to state opinion

Hypothetical expressions: If...then, perhaps, maybe, probably, I think, I'm pretty sure

Student Learning Tasks**Assignment**

- a) Create a play on words or twist to Descartes' famous quotation.

OR

- b) Make a list of text messaging shorthand that might be useful in taking notes. Use these symbols in future note-taking assignments.

- a) List the main points from the previous day's discussion. (I)

Teacher Notes and References

Poetry/Musical Devices: If you want students to work on rhyming in English, have them create a wordplay based on rhyming with "think," or "am," or both. They may use approximate rhymes, as well.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 1.6 Interpret a range of texts...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 2.3.1 Use the structures and language features appropriate to the text type...

SLO 6.1.3 Use directed attention...

SLO 6.1.5 Use selective attention...

SLO 6.2.4 Use note taking...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.9 Use summarization...

SLO 6.2.12 Use inferencing to guess the meanings...

Instructional and Learning Sequence**Main Activity**

Students will now read some articles about the effect of text messaging language.

Step 1: Distribute handouts for each group of three students. Individual members of each group get a copy of a different handout. Provide a set of key vocabulary words for each article (teacher-prepared). Choose key words that students do not know, but that will be useful in discussion and writing for this lesson and module.

- a) Have students work individually reading their own articles, skimming articles, and then scanning for the main ideas. They take notes to record the main points made by the author, also noting research or facts that support the argument. They should ask for help if necessary from group members.

Discuss possible graphic organizers to arrange information from the readings.

Language Features**Vocabulary**

bane, boon, and other words chosen by the teacher

Student Learning Tasks

- a) Skim and scan one of the handouts. Record main points, and note the research or facts that support the argument on a graphic organizer. (I)

Teacher Notes and References

Handout 3-12: "Bane or Boon: The Impact of 'Text Messaging' on Student Writing"

Handout 3-13: "Text Messaging: Boon or Bane"

Handout 3-14: "Text Messaging No Effect on English Proficiency: Study"

Outcomes	Instructional and Learning Sequence
SLO 2.1.3 Use developing control of grammatical features... SLO 2.3.1 Use the structures and language features appropriate to the text type... SLO 3.1 Seek, organize, and synthesize information... SLO 4.3 Use clear and respectful language... SLO 4.5 Experience and consider academic texts... SLO 5.7 Select and present ideas ...keeping in mind the intended audience. SLO 6.1.3 Use directed attention... SLO 6.1.5 Use selective attention... SLO 6.2.7 Use elaboration... SLO 6.2.11 Use transfer... SLO 6.3.1 Use questioning for clarification...	Step 2: Students form Expert Groups of two, consisting of people who have done the same reading. a) Using their notes and the texts, if necessary, they discuss their reading, explaining their understanding and comparing and adding to their notes as appropriate. Step 3: b) Students go back to their Home Groups of three and, using ONLY their notes, explain the main points of their readings to each other. All students take notes about the two other readings. New vocabulary should also be shared and noted. (This is a good time to remind students to use the strategy of questioning for clarification as discussed in SLO 6.3.1.) Step 4: c) Students meet as a class and share information from all the readings.
Language Features	Discourse Features Expressions for discussion: to introduce new ideas and vocabulary, to explain, to question, to restate, to offer opinion, to add information, to agree or disagree, etc.

Student Learning Tasks**Teacher Notes and References**

- a) With a partner, explain your understanding and add to your notes about the handout you read. (P)
- b) In your original group of three, explain the handout you read using your notes. Make notes on the other two readings. (B)
- c) Share information with the class. (C)

Outcomes	Instructional and Learning Sequence							
SLO 1.2 Respond to texts with increasing independence... SLO 1.4 Show an awareness of organizational patterns... SLO 2.1.1 Analyze and edit texts... SLO 2.1.3 Use developing control of grammatical features... SLO 2.3.1 Use the structures and language features appropriate to the text type... SLO 2.3.2 Demonstrate increasing awareness of... rhetorical forms... SLO 4.6 Respond to and critique a variety of individual perspectives... SLO 5.6 Evaluate texts... SLO 6.1.2 Use organizational planning... SLO 6.1.5 Use selective attention... SLO 6.2.7 Use elaboration... SLO 6.2.9 Use summarization... SLO 6.2.13 Use recombination...	Writing Activities 1. Have each student write a four- to five-sentence summary of each article, using two new vocabulary words in each. They will vary their sentence types and use combining forms. OR 2. Have students choose one article and critically evaluate the arguments made by the author. They will use knowledge gleaned from all the articles to make their evaluation. Students must use at least two direct quotations, properly citing their sources. <table border="1"> <tr> <td rowspan="4">Language Features</td><td>Vocabulary</td></tr> <tr> <td>appropriate new vocabulary words to be used in writing assignments</td></tr> <tr> <td>Discourse Features</td></tr> <tr> <td>format for quoting and citing quotations; format of a critique</td></tr> <tr> <td>Academic Language Functions</td><td>summarizing, evaluating and citing</td></tr> </table>	Language Features	Vocabulary	appropriate new vocabulary words to be used in writing assignments	Discourse Features	format for quoting and citing quotations; format of a critique	Academic Language Functions	summarizing, evaluating and citing
Language Features	Vocabulary							
	appropriate new vocabulary words to be used in writing assignments							
	Discourse Features							
	format for quoting and citing quotations; format of a critique							
Academic Language Functions	summarizing, evaluating and citing							

Student Learning Tasks**Assignment**

Write a four- to five-sentence summary of each article, using two new vocabulary words in each. (I)

OR

Choose one article and critically evaluate the arguments made by the author. Use at least two direct quotations, properly citing the sources. (I)

Teacher Notes and References

This is an opportunity for a mini-lesson on writing critiques.

Outcomes

SLO 2.1.1 Analyze and edit texts...

SLO 2.1.2 Use standard Canadian spelling...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.3.1 Use the structures and language features...

SLO 2.4 Use the steps of the writing process...

SLO 3.1 Seek, organize, and synthesize information...

SLO 6.1.2 Use organizational planning...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.7 Use elaboration...

SLO 6.2.9 Use summarization...

Instructional and Learning Sequence

Roundup

Students could:

Write a journal entry discussing the importance of instant messaging in their lives.

OR

Choose one of the strategies they used in this lesson that really helped them complete it successfully. Write about the strategy and how they used it.

OR

Compare the shorthand used in text messaging to that used in their first language. Also, discuss whether this shorthand is infiltrating formal writing.

Student Learning Tasks**Teacher Notes and References****Assignment**

Write a journal entry about the importance to you of instant messaging.

OR

Write about a strategy that helped you and how you used it.

OR

Compare the shorthand used in text messaging to that used in your first language.



English Spelling Is Torchur

Some predikshuns just don't cum troo. Consider ower confusing English spelling. Ask any EAL stoodent, and he or she can give you lots of eggssamples. How about bough or colonel or knife? It's pretty klear that English is meant to befuddle.

In 1900, linguists thought that American English could use some simplification and economizing. According to the *Ladies Home Journal* of December 1900, by the year 2000 there would be no C, X, or Q in the alphabet. Their reasoning was there would be no need for these letters. They predicted that phonetic spelling would be the norm and that English would be the language most often spoken in the world, with Russian being the second most common language.





Internet Shorthand

The Internet has spawned a whole new subdivision of the language. I do not refer to legitimate neologisms, such as “.com” or “dotcom,” “website,” and “homepage,” but to the new shorthand that looks like this: “Thnk u 4 ur msg i rly prshate it” (Thank you for your message. I really appreciate it.).



This kind of arbitrary use of abbreviations and (more or less) phonetic spelling makes several statements about the author, none of them complimentary: 1) He or she is lazy. Just how much effort is required to use the shift key to distinguish the pronoun *I* from the letter *i* or to mark the first word of a sentence? 2) He or she is probably a bad speller and wants to hide this unpleasant truth. 3) He or she is oblivious to the function of punctuation, regards it as mere decoration, and therefore has (from sheer ignorance) discarded it. 4) He or she is unaware that the purpose of writing is to communicate as clearly as possible with the reader, not to present symbols to be decoded. A writer's first

obligation is to make the reader's task easy. Writing in code arrogantly ignores this silent contract that exists between reader and writer.

Furthermore, this style of writing (though style is too dignified a term for it) reveals a juvenile propensity to adopt anything that is new, with no consideration to whether it is good or bad. It says: “Whoa! Look at me! Ain't I trendy and cute.” Sorry, baby, you “ain't”; you are just an annoying and immature hack, with no comprehension of or respect for civilized communication.

I reluctantly concede some minor exceptions. For instant messaging or real-time, online communications—particularly those that are one-to-one—shorthand is permissible because of time constraints, provided the parties in the exchange both (or all) agree to it. For expressing emotional reactions visually (via emoticons or agreed-upon acronyms such as LOL for Laughing Out Loud), Internet lingo has a limited value.

Otherwise, Internet shorthand is an abomination. It is linguistic anarchy, a frightening symbol of the “dumbing down” of communication.

LOL

: -)

: - O

Source: <<http://www.grammarmudge.cityslide.com/page/page/232347.htm>>.



Bane or Boon: The Impact of "Text Messaging" on Student Writing

February 14, 2003

Adapting to a world of ever-shorter screens and ever-longer laundry lists of activities, today's tech-savvy teens are creating a whole new language of abbreviations as they use cell phones and computers to correspond via short electronic communications called "text messages." But the rise of this new form of alphabet-soup shorthand has educators debating its effect on students' writing habits.

The text messages on 13-year-old Margarete Stettner's cell phone are filled with shortcuts like "G2G" for "got to go" and "LOL" instead of "laughing out loud." Even when she isn't using her phone, the lingo sometimes makes its way into what she writes.

"It does affect, sometimes, how I do my schoolwork," the teen from Hartland, Wis., said as she shopped in a mall, where cellular phones are as common as low-cut jeans. "Instead of a Y-O-U, I put a U."



That alarms some educators and linguists, who worry that the proliferation of text messaging—where cell phone users type and send short messages to other phones or computers—will enforce sloppy, undisciplined writing habits among American youths. Other experts, though, don't think the abbreviations will leave their mark on standard English.

In June 2001, wireless phone users sent 30 million text messages in the United States, according to the Cellular Telecommunications and Internet Association, an industry trade organization. By June 2002, that number had increased to nearly 1 billion.

The method is most popular among teenagers, according to Upoc Inc., a New York-based firm that helps users of mobile devices share information on everything from the rapper Bow Wow to celebrity sightings. A study by Upoc in 2001 found 43 percent of cellular phone users ages 12 to 17 used text messaging, compared with 25 percent of those ages 30 to 34.

These teenagers, hampered by limited space and the difficulty of writing words on numeric phone keypads, helped create the text-messaging lingo.

Words are abbreviated ("WL" for "will"), and common phrases become acronyms ("by the way" turns into "BTW"). There are even dictionaries to sort out the meaning of, say, "AFAIK" ("as far as I know").

"SOL" can mean "sooner or later" or "sadly out of luck," but if you're unclear on which was meant, simply message back a "W" ("what") or "PXT" ("please explain that") for a clarification.

Jesse Sheidlower, principal editor of the U.S. office of the Oxford English Dictionary, said text messaging is going through the natural progression of language.

(continued)

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Bane or Boon: The Impact of "Text Messaging" on Student Writing (continued)

Much text-messaging lingo was first used in instant-messaging programs on personal computers, and some phrases, such as "SWAK" for "sealed with a kiss," have been used for decades, Sheidlower said.

As text messengers discover and share new abbreviations and acronyms, the language becomes familiar to a growing population of cell phone users. And as more people use the lingo for text messaging, Sheidlower said, it is more likely to spill into speech or writing.

That worries American University linguistics professor Naomi Baron, who said text messaging is another example of a trend in written communication.

"So much of American society has become sloppy or *laissez faire* about the mechanics of writing," Baron said.

Problems arise when people use the casual language in other forms of written communication, such as email, in which the sender might not receive the message for some time, or writings in which the reader might not even know the author, she said.

But other linguists said a simpler, more relaxed vernacular is acceptable for talking or text messaging.

"Language and languages change," said Carolyn Adger, director of the Language in Society Division of the Center for Applied Linguistics in Washington, D.C. "Innovating with language isn't dangerous."

And besides, Adger said, text messaging—like email and instant messaging—is making it easier for people to communicate.

"I think that all of this stuff is really wonderful, because it's expanding the writing skills of people," she said.

Chris Mahoney, director of technology for the Lake Hamilton School District in Arkansas, agreed.

"I think the students are actually writing more and are benefiting from instant messaging, simply because it encourages them to write and it is something they are interested in," Mahoney said. "They are using acronyms, but writing more than they would in a normal note or paper. Students are verbalizing and learning communication skills while using these new technologies. Teachers are holding students to the same grammatical standards in formal writing and, for the most part, do not accept linguistic shortcuts in their classrooms," he added.

Text messaging hardly appears to have hurt written language in Europe, where 10 billion text messages are sent each month, said Charles Golvin, senior analyst with Forrester Research.

In fact, as more adults began using text messaging in Britain and Germany, the lingo fell out of favour, said Alex Bergs, a visiting linguistics professor at the University of Wisconsin-Milwaukee. Even teenagers use the language for only a while, he said.

One teen in Milwaukee, college student Jeremy Rankin, spends quite a bit of time using wireless devices in his job at a cell phone store. The 18-year-old admits he sometimes finds himself abbreviating when he types.

"I might do it by accident, but I don't think that's a problem as far as school papers go," he said. "I proofread my stuff."

Text Messaging: Boon or Bane

By Ruby Jane L. Cabagnet

The proliferation of text messaging, as short message service (SMS) is known locally, has created a whole new culture in the country—it changes the way we communicate in more ways than we are aware of.

Yet, even as this phenomenon seeps into our society, opinions and sentiments are divided on whether this technological advancement is a boon or bane.

This new culture belongs to the Gen-txt community—as one local mobile phone service company has aptly described the people that have created for themselves a different way of communicating. And as the texting-proficient would put it: *cd vwls dspr frm lng'ge altgthr? or cd evry wrd wd b nw abbrvtd?*

Peter Fernandez, information technology professor at the Asian Institute of Management, expressed ambiguous feelings towards this texting boom, which he claims is already a culture here in the Philippines. He attributed the cradle of this culture to a medium that is relatively cheap and something that anybody can use—even “people who don’t know how to spell properly.”

“Text messaging is already a generational culture here in the Philippines, no matter how much we deny or ignore the fact,” he said.

DUBIOUS DISTINCTION

Analysts said that there are about 4.5 million mobile phone users in the country today, and that among them about 60 million text messages are being exchanged in a day.

“It has been (an) accepted (fact) that the capability in English communications of high school or even college students is quite lacking, and I think that this could even be exacerbated by this technology,” he said.

But Mr. Fernandez believed that since cultural problems generated by the wrong use of SMS are technology-driven, then chances are new technology would be the one to provide solutions. “With the availability of a much more convenient way of a correcting mechanism, then the minor de-skilling brought about by text messaging might be corrected gradually,” he added.

Selwyn Clyde Alojipan of Mosaic Communications and a sometime high school teacher could not agree more, pointing out that “as technology advances, it will be possible to enhance the current SMS-input interface (keypads) with either dictionary-aided shortcuts, voice recognition, or other still-to-be-discovered means.”

But although he believes that the extremely abbreviated spelling mode of texting might eventually fade away, he qualified in his email remark to *I.T. Matters* that people could still continue to communicate this way “even when the need for this has passed, if it has become so ingrained in people.”

QUESTIONABLE SKILL

He is not overly concerned about that, however, because as he said “as with any popularly accepted activity of social convention, breaking or bending the spelling and grammar rules of our languages requires enough knowledge on what rules you can break, so that you can get away with it without being shunned.”

Mr. Alojipan pointed out that “this type of activity can be done better by those who know the rules of language well than by those who do not. For instance, instead of asking “do you understand” you can now type, “do u undrstd or Gets mo?” (Did you get it?), which is a major saving texting effort.” The examples are endless: BCNU (be seeing you); XLNT (excellent); CUL8R (see you later); OIC (oh, I see); etc.

“I’m actually thrilled that a new form of communication is being developed by the people which matches their daily needs. It does not mean that traditional skills in English and Filipino spelling (or grammar) will necessary weaken,” Mr. Alojipan said.

There are those who do not share his sentiments, however.

One speech teacher observed that although this use of SMS seems to enhance the creative skills of students, particularly when they try to think of ways to abbreviate or shorten words, it could likewise erode or stunt the vocabulary of students because they could soon start using simple words to express themselves.

Text Messaging: Boon or Bane (continued)

Ateneo de Manila high school teacher, Paul Anthony Villegas, for one, has seen the effect of the kind of language use in texting on the essays of some of his students, who would tend to write, for example, the words: 4u or 2gthr yrs l8r or cd u ndrstd wat m tlkng abt hr?

ALARMING PROPORTIONS

More alarming, he said, is not only the way these students would delete certain letters—mostly vowels—in certain words, but how they would also use shortcuts on sentence construction conventions. “Some students get too comfortable and apply the kind of shortened language in their compositions,” he noted.

Mr. Villegas expressed concern that if this were to become habitual and embedded in a student’s mentality, he might find it difficult to write better compositions, formal letters, or—worse still—documents and reports in an increasingly interdependent and fiercely competitive global economy.

La Salle Greenhills High School principal Lilia Vengco admitted that some teachers have complained of finding SMS language on some of their students’ compositions, especially when text messaging started to become so popular among the youth.

Still, she downplayed the supposedly negative effect of this SMS technology on the educational formation of her wards. “I would like to think that they really know the correct spelling and grammar structure. And besides, we do not tolerate that kind of language in this school,” she said.

To discourage the use of texting language in essays and compositions, both schools said they give deductions on a student’s grade, while the use of mobile phones during and in-between classes has been banned.

Some high schools students say, however, that it is the “in” thing to do nowadays and the “shorter it is, the better,” although they claimed they would be the first ones to say that SMS form is not the proper way to write English or Tagalog.

Mst f d tym dey usd ds knnd f lng’ge 2 tlk 2 1 anthr nt lly n txt bt evn n wrtng ltrs 2.

Others even added that this “new skill of shortening words” helps them whenever they have to take down dictations.

But while Mr. Alojipan stressed that in order for someone to play around with spelling, he or she must have a relatively good understanding of spoken or written language, he admitted that “students should be guided that each form or mode of communication has its uses, advantages, and disadvantages, and that they must make sure that no matter how they send the message, it must still be understood by the recipient.”

DANGER OVERSTATED?

Still, one is compelled to ask about the implications, if any, of the texting culture on the educational formation of our youth today—never mind the so-called professionals because, as AIM professor Mr. Fernandez said, they already have at least developed their communication skills.

“I am not saying that it will reduce our capability in communicating in English, but the form, specifically the written form, might be affected,” Mr. Fernandez said.

He warned that rules are even more stringent in written than oral form in most languages.

One sure effect, he said, is that “English becomes ugly.

“It gets into your system, and if it gets into your system then chances are you are going to use it when you write, and this would impact (on) the college and high school students more profoundly, considering that text messaging is being widely used by these people,” Mr. Fernandez said.

On the other hand, he said that this technology is creating a sense of community and making it easier for people to communicate with one another.

“There is also a positive impact, so the question is: with the minimal de-skilling that you get out of these technology—is it big enough to not justify the positive impact?” he asked.

Mr. Alojipan, for his part, opined that the “feared spelling and grammar breakdown is not a problem and won’t cause the collapse of Filipino society.”

Text Messaging No Effect on English Proficiency: Study

THE PRACTICE of using abbreviated spelling and grammatical shortcuts when sending short text messages on mobile phones had little or no impact on the senders' proficiency in the English language, a Philippine university study said.

The study, which involved 433 freshmen English students from De La Salle University in Manila and the University of the Philippines campus in Los Baños, Laguna, south of Manila, found that there were no significant differences in the grammar and spelling scores of mobile phone owners and non-owners.

Study author Mildred Rojo-Laurilla, an assistant professor at De La Salle University's department of English and applied linguistics, also found that students were still able to discern the difference between conventional English and the abbreviated English used in "texting."

The study found that respondents used a mix of English and Filipino words whenever they sent text messages.

The study's results were released amidst concerns that the abbreviations and phonetic spelling that text messaging users employed to get around tight character limitations and cumbersome phone keyboards would affect their ability to write conventional English.

President Gloria Macapagal-Arroyo, saying the country was losing its proficiency in English, recently ordered that English be reinstituted as the medium of instruction in Philippine schools instead of Filipino.

Source: <http://www.inq7.net/inf/2003/feb/03/text/inf_2-1-p.htm>. Author unknown.



Topic 4B

**Recreation and
Technology:
Computer Game
Geeks:**

**How Playing Video Games
Affects Recreational and
Study Time**

(2–3 lessons)



In these lessons, students will fill out an anticipation guide about the impact of video and computer games; watch and take notes about a video of two students discussing their personal use of and ideas about computer and video games; create and administer surveys, analyze and graph the results of surveys; read articles about various research studies regarding the impact of playing video and computer games; and give mini-lectures about them. Some of the other main academic tasks are: making and using notes to speak from; using intelligible pronunciation;

introducing a topic; sequencing; exemplifying; restating; summarizing and concluding; stating a point of view; listening to a lecture; understanding parts of a lecture through lexical, grammatical, and discourse indicators; understanding intonation and emphasis in speech; deducing the meaning of unfamiliar word groups; distinguishing the main ideas from supporting detail; reading critically; understanding graphs and tables; using visuals to clarify relationships; describing graphs; reporting; drawing conclusions; and using standard spelling and grammar.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 2.1.3 Use developing control of grammatical features...

SLO 4.1 Use language to encourage...

SLO 6.1.7 Use problem identification...

SLO 6.2.7 Use elaboration...

SLO 1.4 Show an awareness of organizational patterns...

SLO 1.5 Examine and interpret various visual media...

SLO 2.3.1 Use the structures and language features...

Instructional and Learning Sequence

Sequence 1

Activation

Ask students how many of them play computer and video games. Refer them to the anticipation guide (**Handout 3-15: "Anticipation Guide: Playing Computer Games"**). Point out the directions on the guide and have students fill out the guide individually.

- a) Group students in triads to discuss each statement in the guide. They must come to a consensus in their rating as a group. Share the ratings as a class.
- b) In the large group, have students discuss the attraction of video games and the positive and negative aspects of playing them. Record responses. Tell students they will be watching a video clip of two students in Canada who discuss their involvement with computer and video games.
- c) Prepare them by previewing some of the vocabulary they will encounter.

Language Features

Vocabulary

Nouns: incentive, obsession, competition, self-control, pro-gaming, animation

Adjectives: self-disciplined, inept, inactive

Expressions: interpersonal skills, social interaction, alleviate stress, hand-eye coordination

Idioms: being hooked on, kill time, kick the habit

- d) Give students the graphic organizer (**Handout 3-16: "Graphic Organizer: Kevin and Joo"**) to fill out as they watch and listen to the video clip. Tell students that the first speaker is Kevin and the next speaker is Joo. Review good note-taking skills. Also, encourage students to use their text-messaging shorthand discussed in the previous lesson. Play the clip once. Check for comprehension. Play it again, if necessary, for students to complete their graphic organizers.

Language Features

Discourse Features

Creating point-form notes using shorthand: symbols, abbreviations

Student Learning Tasks

- a) In triads, discuss and come to consensus about each statement in **Handout 3-15**: "Anticipation Guide: Playing Computer Games." Share rating with class. (B) (C)
- b) Discuss the attraction of video games and the positive and negative aspects of playing them. (C)
- c) Participate in the teacher-prepared previewing activity. (B).
- d) Fill out **Handout 3-16**: "Graphic Organizer: Kevin and Joo" as you watch and listen to the video clip of two students discussing their involvement with computer and video games. (I)

Teacher Notes and References

Handout 3-15: "Anticipation Guide: Playing Computer Games"



Note: You might want to prepare a fill-in-the-blank activity, creating sentences that will help the students use context to guess the meanings of the new words and expressions. (Put the first letter of the word or expression in the blank as a clue if needed.) Include a bank of words from which students can choose.



Handout 3-16: "Graphic Organizer: Kevin and Joo"

Resource Video: *Kevin and Joo*



A copy of the resource video can be obtained from the Manitoba Education, Citizenship and Youth website at www.edu.gov.mb.ca/ks4/cur/diversity/eal.

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.4 Show an awareness of organizational patterns...

SLO 1.6 Interpret a range of texts...

SLO 1.7 Evaluate a given text...

SLO 4.3 Use clear and respectful language...

SLO 6.1.5 Use selective attention...

SLO 6.2.7 Use elaboration...

Instructional and Learning Sequence

- e) Ask students about their ability to comprehend and take notes. What helped them? (Did they mention the following interviewer techniques: introduction of new questions, clarification, exemplification, and summarization?) What hindered them? (Did they mention the pronunciation and grammar of the one student who was not quite as strong as the other?)
- f) As a class, have students discuss their notes from the video. Also, have them share their note-taking shorthand. Ask students how computer games affected the physical fitness, recreation time, and study time of these two students.
- g) Have students respond personally to this question: Did/do computer games have a positive or negative effect in your own life?

Language Features**Vocabulary**

Expressions for discussion: to express opinion, to agree, to disagree, to add information, to question, etc.

Student Learning Tasks**Teacher Notes and References**

- e) Take part in discussion about comprehending and note taking. (C)
- f) Discuss your notes from the video and share your note-taking shorthand. (C)
- g) Respond personally to this question: Did/do computer games have a positive or negative effect in your life? (I)

Outcomes

SLO 1.4 Show an awareness of organizational patterns...

SLO 1.5 Examine and interpret various visual media...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 2.2 Use several visual techniques...

SLO 3.1 Seek, organize, and synthesize information...

SLO 4.4 Manage group action...

SLO 5.2 Analyze and use the appropriate level of formality...

SLO 6.1.2 Use organizational planning...

SLO 6.2.3 Use grouping of items to classify...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.7 Use elaboration...

SLO 6.2.9 Use summarization...

Instructional and Learning Sequence**Homework Assignment**

Using the suggested materials and the information from this lesson:

- a) In groups of three, students will create a survey. They must decide what aspect of playing computer games they want to explore and what their target group is. They may want to consult the survey instrument created by James D. Ivory for ideas (**Handout 3-17: "Survey Instrument"**). Then, they must create a set of survey questions. They must decide how many people they will survey. On their own time, students administer their surveys to their chosen group.
- b) Once the surveys are complete, each group of students must decide how to visually represent the results.

They will share, interpret, and come to conclusions about their results with the whole class. They must decide how to compile all the results and represent them statistically.
- c) Once this is decided, students will record their statistical information on poster board to be displayed in the classroom.

Language Features**Vocabulary**

Math vocabulary and statistical vocabulary: target group, sample, random selection, simple random sampling, stratified random sampling, accidental random sampling, valid, results, sort, tally, compile, line graph, pie chart, bar graph, stacked bar graph

Discourse Features

formulating survey questions

Student Learning Tasks**Assignment**

- a) In groups of three, create a survey about computer games. (6)
- b) Decide how to visually represent your results. (6)
- c) Record your statistical information on poster board. (6)

Teacher Notes and References

Appendix 14: Tips for Wording and Ordering Survey Questions

Handout 3-17: "Survey Instrument"



Brainstorm as a class if students are having difficulty thinking of or deciding upon a focus for their survey. Certainly one focus should be the impact of computer games on recreational time and physical fitness.

Try to have each group focus on something different.

Outcomes

SLO 1.4 Show an awareness of organizational patterns...

SLO 1.6 Interpret a range of texts...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 2.3.3 Produce effective oral presentations.

SLO 3.3 Quote from or refer to sources...

SLO 5.7 Select and present ideas ...keeping in mind the intended audience.

SLO 6.1.2 Use organizational planning...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.4 Use note taking...

SLO 6.2.9 Use summarization...

Instructional and Learning Sequence

Alternate or Additional Activity

Internet articles may be assigned (see Teacher Notes and References for some examples) to give students some idea of the kinds of research done concerning the playing of video/computer games.

- a) Divide the class into four groups.
- b) Choose the articles you want to use.
- c) Assign one of the articles to each group to read.
- d) Students highlight the articles and record the main points made by each author.
- e) They look up key vocabulary after trying to guess the meanings through knowledge of affixes and root words, and through context clues. Each group's eventual goal is to summarize the points made by the author.
- f) Groups then share their points with three other classmates in the form of a mini-presentation or lecture. Groups work together to decide what the main points in their summaries should be.
- g) Students also design a note-taking graphic organizer for classmates to use as they listen to the summaries being presented. In order to prepare for lecturing, group members must decide on the types of organizational signals they will use, so that fellow students will be able to follow their lectures. Each group member practises his or her lecture in front of the other group members, who offer praise and constructive criticism.

(continued on page 102)

Student Learning Tasks

Read the assigned article, highlight and record the main points made by each author. (6)

Share summaries with three other classmates as a mini-presentation or lecture. (6)

Design a note-taking graphic organizer for classmates to use as they listen to the summary. (1)

Teacher Notes and References

Internet Resources: "Video Games and Their Effects" at:

<www.mediascope.org/pubs/ibriefs/vge.htm>

"Video Games Good for You" at:

<<http://news.bbc.co.uk/1/hi/technology/2943280.stm>>

"Can Video Games Ease Physical Pain?" at:

<http://news.com.com/2102-1043_3-993323.html?tag+st_util_print>

"Video Games Hone the Mind" at:

<www.cbsnews.com/stories/2003/05/28/tech/printable555921.shtm01>

"Video Games Help Hyperactive Children"

at: <<http://news.bbc.co.uk/1/hi/sci/tech/894673.stm>>

"Video Games: Cause for Concern?" at:

<<http://news.bbc.co.uk/1/hi/uk/1036088.stm>>

"Study Surprise: Video Games Enhance College Social Life" at:

<www.usatoday.com/tech/news/2003-07-06-games_x.htm>

Additional science-related idea: At

<<http://scienceforfamilies.allinfoabout.com/features/videogameexperiment.htm>> there is a science experiment by C.J. Brassington about whether video games affect blood pressure. Students may want to conduct an experiment like this themselves.



Choose the readings that are of interest to your class or have students choose them.

Alternately, let students find readings in which they are interested.

Outcomes**Instructional and Learning Sequence***(continued)*

- h) Form new groups of four in which each member is an "expert" on one article. Group members take turns guest-lecturing to the other group members, who record information on the graphic organizers designed for this purpose. Each lecturer reviews the graphic organizers to see how much information he or she was able to impart to the listeners.
- i) Listeners give each lecturer feedback about the clarity of the lecture.
- j) Discuss the activity in terms of strategies used, successes, and problems. Keep track of these ideas for the next time an activity like this is done.

Language Features**Vocabulary**

as needed to understand each reading

Structures

Punctuation pauses in speech: use of commas after introductory or parenthetical phrases or words, shown by a pause in speech

use of appropriate tense; appropriate use of article; essential and non-essential clauses; combining structures

Discourse Features

Order of ideas/changing to the next point in a sequence: to introduce..., next, another idea, furthermore, to conclude, OR first, second, third, fourth, finally, last, etc.; exemplification: an example is...; for example,..., a ~, or ~, etc.

Adding information: in addition, furthermore, also, etc.

Restatement: in other words, thus, therefore, to restate, to reiterate, etc.

Summarizing: to sum up, briefly, the main points/ideas are, etc.

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 6.2.7 Use elaboration...

SLO 6.2.9 Use summarization...

Roundup

Students may write a personal response to one of the articles, summarize what they have learned, or state their own opinions about playing computer and video games.

Language Features**Discourse Features**

To state opinion: In my opinion~; I believe~; according to...; after reading...I think/believe/agree/disagree~; I am convinced that...;etc.

Student Learning Tasks**Teacher Notes and References**

Group members take turns guest-lecturing to the other group members. (6)

Give feedback about the clarity of the lecture. (1)

Discuss the strategies used in this activity. (6)

Assignment

Write a personal response to one of the articles and summarize what you have learned. (1)

OR

State your own opinions about playing computer and video games. (1)

Anticipation Guide: Playing Computer Games

Directions: Rate each statement according to the Strongly Agree/Strongly Disagree continuum and explain your choices. (You may be asked to write about them on a separate sheet of paper.) Then, in your groups, discuss each statement. You must come to consensus in your rating. (Optional: Ask two people outside your high school and over 19 years of age to rate these statements. How do their answers compare with yours?)

1. Playing computer games affects players more positively than negatively.

☐ strongly disagree ☐ disagree ☐ depends ☐ agree ☐ strongly agree

2. Most players cannot exert self-control in limiting the amount of time they play computer games.

☐ strongly disagree ☐ disagree ☐ depends ☐ agree ☐ strongly agree

3. Playing computer games helps develop important skills.

☐ strongly disagree ☐ disagree ☐ depends ☐ agree ☐ strongly agree

4. Playing computer games does not have any impact on one's level of physical fitness.

☐ strongly disagree ☐ disagree ☐ depends ☐ agree ☐ strongly agree

5. Computer games are only a passing fancy.

☐ strongly disagree ☐ disagree ☐ depends ☐ agree ☐ strongly agree

6. Playing computer games is a social activity.

☐ strongly disagree ☐ disagree ☐ depends ☐ agree ☐ strongly agree

7. Playing computer games can cause physical problems.

☐ strongly disagree ☐ disagree ☐ depends ☐ agree ☐ strongly agree



Graphic Organizer: Kevin and Joo

Questions	Kevin	Joo
Began playing when?		
Reasons for playing?		
How many hours per day?		
Effect of video games on students' lives? Recreation? Studying? Physical fitness? Socializing?		
Any positive aspects?		
Effect on obsessed/addicted players?		
Plans to control habit?		



Survey Instrument

This is a survey designed to gather information on students' video game habits. This survey is completely anonymous. Please do not put your name on the survey, but answer all questions as completely and honestly as possible. Thank you for your help. Your responses are a valuable contribution to this research.

For the purposes of this survey, "video games" refers to any electronic game that you play strictly for entertainment, alone or with others. This may include home video consoles (Playstation, Nintendo, etc.), computer games of all types (Solitaire, Doom, etc.), online games (Everquest, MUDs), arcade games, or any other type of electronic games you play for amusement.

1. When was the last time you played a video game?

TODAY THIS WEEK THIS MONTH THIS YEAR LESS RECENTLY NEVER

2. About how many times in an average week do you play video games? _____ times

3. About how many hours per week do you think you spend playing video games? _____ hrs.

4. What is the approximate value of the video games and related equipment in your home? \$ _____

(Do not include computers or other equipment purchased primarily for other purposes.)

5. Among your leisure activities, where would you place video games?

MOST IMPORTANT VERY IMPORTANT SOMEWHAT IMPORTANT
NOT VERY IMPORTANT NOT AT ALL IMPORTANT

6. How often would you say video games have taken time away from other activities?

VERY OFTEN OFTEN OCCASIONALLY RARELY NEVER

7. How and to what extent has time spent playing video games affected your performance in school?

VERY NEGATIVELY SOMEWHAT NEGATIVELY NO EFFECT ON SCHOOL
SOMEWHAT POSITIVELY VERY POSITIVELY

8. Has playing video games affected other aspects of your life? (Check all that apply)

_____ WORK
_____ OTHER HOBBIES/PROJECTS
_____ SLEEP
_____ HYGIENE
_____ CHORES
_____ SOCIAL LIFE
_____ RELATIONSHIPS
_____ OTHER (PLEASE DESCRIBE)

IF YOU DID NOT CHECK ANY CHOICES ON QUESTION 8, SKIP TO QUESTION 10

IF YOU CHECKED ANY CHOICES ON QUESTION 8, PLEASE ANSWER QUESTION 9:

(continued)

Source: <<http://www.unc.edu/~jivory/app.html>>. Cited from James D. Ivory's master's thesis, University of Wyoming. Reprinted by permission.

Survey Instrument (continued)

9. How has playing video games affected the above aspects of your life?

VERY NEGATIVELY	SOMEWHAT NEGATIVELY	NO EFFECT AT ALL
SOMEWHAT POSITIVELY	VERY POSITIVELY	

10. Overall, how much is your general productivity affected by time spent playing video games?

MUCH LESS PRODUCTIVE	LESS PRODUCTIVE	NO EFFECT AT ALL
MORE PRODUCTIVE	MUCH MORE PRODUCTIVE	

11-16: Complete these items by indicating how true you think the statements are about YOU :

11. I wish I did not play video games as much as I do.

STRONGLY DISAGREE	DISAGREE	UNSURE/NEUTRAL
AGREE	STRONGLY AGREE	

12. I would be better off if I spent less time playing video games.

STRONGLY AGREE	AGREE	UNSURE/NEUTRAL
DISAGREE	STRONGLY DISAGREE	

13. My video game play bothers other people I know.

STRONGLY DISAGREE	DISAGREE	UNSURE/ NEUTRAL
AGREE	STRONGLY AGREE	

14. I would be healthier if I played fewer video games.

STRONGLY DISAGREE	DISAGREE	UNSURE/ NEUTRAL
AGREE	STRONGLY AGREE	

15. I think that other people may become addicted to video games.

STRONGLY DISAGREE	DISAGREE	UNSURE/NEUTRAL
AGREE	STRONGLY AGREE	

16. I am addicted to video games.

STRONGLY DISAGREE	DISAGREE	UNSURE/NEUTRAL
AGREE	STRONGLY AGREE	

17. What is your age? _____

18. What is your gender? M F

19. What is your class standing?

FRESHMAN	SOPHOMORE	JUNIOR SENIOR
2nd DEGREE	GRAD	OTHER

20. Where do you live while attending school?

DORMITORY/UW HOUSING	GREEK HOUSING	OFF-CAMPUS ALONE
OFF-CAMPUS WITH OTHERS	WITH FAMILY/PARENTS	OTHER

21. When do you expect to graduate? (Term and year) _____



Topic 5A
**Biotechnology:
GM Foods**

(1 lesson)

This lesson introduces students to extensive vocabulary for the topic of biotechnology. Students will read critically from a selection of differing viewpoints. They will complete a survey (Likert Scale); follow the flow of an argument; analyze reporting verbs for implied attitude; consider

audience, purpose, and context; and read abstracts to determine the main ideas. They will synthesize information to discuss and write a short text about a controversial topic. They may design an information brochure.

Outcomes	Instructional and Learning Sequence									
SLO 6.1.1 Use advanced organization... SLO 6.1.6 Use self-monitoring to check... SLO 6.2.7 Use elaboration... SLO 6.2.10 Use translation... SLO 6.2.12 Use inferencing to guess the meanings... SLO 6.2.3 Use grouping of items to classify...	Sequence 1 Activation Have a Word Splash on the board when students arrive. Allow students a few minutes to discuss the words with each other. Remind them of clues to meaning, such as affixes. Pronounce the words. Allow students to consult dictionaries if desired. a) Ask students to predict the topic of discussion. Remind them that each topic area has essential vocabulary words. b) Have students sort the words according to part of speech; add other common forms (e.g., manipulate [verb]— manipulation [noun]). If desired, also sort them into positive, negative, and neutral words. <table border="1"> <tr> <td rowspan="2">Language Features</td> <td>Vocabulary</td> </tr> <tr> <td> For Word Splash: biotechnology, manipulate, gene, genetic, engineering, crops, combination, breed, livestock, traits, select, alter, DNA, modify, resistant, create, species, cloning, diversity, risk, label, potential, tamper, controversy, dilemma </td> </tr> </table> c) Ask students to complete Handout 3-18: "Biotechnology Attitudes Survey." d) Discuss the meaning of any questions as necessary, but avoid discussing the issues at this time. Students keep the Handout for later discussion. <table border="1"> <tr> <td rowspan="2">Language Features</td> <td>Discourse Features</td> </tr> <tr> <td>survey format</td> </tr> <tr> <td rowspan="2"></td> <td>Academic Language Functions</td> </tr> <tr> <td>reading critically</td> </tr> </table> Optional "The Basics and Beyond" website features interactive tutorials on DNA and genetic manipulation that can be downloaded. It can be used to enrich students' background knowledge. It offers animations and text concerning various aspects of genetics.	Language Features	Vocabulary	For Word Splash: biotechnology, manipulate, gene, genetic, engineering, crops, combination, breed, livestock, traits, select, alter, DNA, modify, resistant, create, species, cloning, diversity, risk, label, potential, tamper, controversy, dilemma	Language Features	Discourse Features	survey format		Academic Language Functions	reading critically
Language Features	Vocabulary									
	For Word Splash: biotechnology, manipulate, gene, genetic, engineering, crops, combination, breed, livestock, traits, select, alter, DNA, modify, resistant, create, species, cloning, diversity, risk, label, potential, tamper, controversy, dilemma									
Language Features	Discourse Features									
	survey format									
	Academic Language Functions									
	reading critically									
SLO 1.3 Develop and express a personal position in a variety of ways...										
SLO 5.6 Evaluate texts... SLO 6.2.1 Use resourcing to access...										

- a) Ask students to predict the topic of discussion. Remind them that each topic area has essential vocabulary words.
- b) Have students sort the words according to part of speech; add other common forms (e.g., manipulate [verb]— manipulation [noun]). If desired, also sort them into positive, negative, and neutral words.

- c) Ask students to complete **Handout 3-18: "Biotechnology Attitudes Survey."**
- d) Discuss the meaning of any questions as necessary, but avoid discussing the issues at this time.
- Students keep the Handout for later discussion.

Student Learning Tasks

Teacher Notes and References

- a) Predict the topic of discussion based on the words in the Word Splash. (I)
- b) Sort the words according to part of speech; add other common forms. (C)

- c) Complete **Handout 3-18: "Biotechnology Attitudes Survey."** (I)

- d) Discuss the meaning of any questions as necessary. (C)

If required, read the tutorials on DNA.



Handout 3-18: "Biotechnology Attitudes Survey"



Students will be reading and discussing different viewpoints; emphasize the responsibility of the reader to actively question and weigh all alternatives.



Many applications of scientific knowledge are very controversial, and biotechnology is no exception. When we read or hear discussions or reports about a controversial topic, it's important to read and listen critically.



Internet Resource: "The Basics and Beyond" at:

<<http://gslc.genetics.utah.edu/units/basics/>>



The readings in this lesson contain many different reporting verbs. Compile a list on the board as you encounter them in context. Note the attitude towards the speaker or information that each verb implies.

Outcomes

SLO 6.1.1 Use advanced organization...

SLO 6.1.5 Use selective attention...

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.4 Show an awareness of organizational patterns...

SLO 1.6 Interpret a range of texts...

SLO 2.3.2 Demonstrate increasing awareness of... rhetorical forms...

SLO 5.6 Evaluate texts...

SLO 6.2.3 Use grouping of items to classify...

Instructional and Learning Sequence

Sequence 2

Introduction

Use the article **Handout 3-19: "Genetic Engineering—Introduction"** or one of your choice in a science textbook as a reading assignment. The article should include the related ethical and social dilemmas.

The questions here are based on the Handout 3-19 article, but may be adapted to fit a different one. The stress is on critical reading skills: distinguishing viewpoints and following thought flow.

- a) Explain the context of the article (see Teacher Notes and References column).
- b) Preview the introduction and subheadings. What will be the main ideas of this article? What do you expect to read in each named section? Why does the reader always need to watch for possible bias in a current topic like this one?

Naming: Note the use of reporting verbs that communicate attitudes and colour the reader's beliefs (see Language Features column).

How does the discussion of names reflect different beliefs about the technology?

Ethics: Using two columns, have students list the arguments for and against genetic engineering. Find the discourse markers that move the reader between the arguments.

OR

Cut apart the paragraphs in the section and have students reassemble them using text cues.

Overall, do you think there is a bias for or against the technology expressed here? How have the multiple contributors developed a balance of views?

Language Features

Discourse Features

The readings in this lesson contain many different reporting verbs. Compile a list on the board as you encounter them in context. Note the attitude towards the speaker or information that each verb implies.

Examples of reporting verbs: admit, concur, question, object to, report, argue, explain, cite, propose, suggest, insist, claim, announce, stress, add, complain, state, call for

The usual pattern in English sentences is to move from given or known information to new information. The known information often appears as the complete subject, with the new information forming the complete predicate.

discourse markers of attitude

Academic Language Functions

reading critically

detecting point of view

Student Learning Tasks

Think about and predict what the article will address based on the preview questions for **Handout 3-19: "Genetic Engineering—Introduction."** (I)

Using two columns, list the arguments for and against genetic engineering. Find the discourse markers that move the reader between the arguments. (I)

OR

Reassemble paragraphs using text cues. (II)

Discuss whether there is a bias for or against the technology expressed in the article. (C)

Teacher Notes and References



Handout 3-19: "Genetic Engineering—Introduction"



Students will be reading and discussing different viewpoints; emphasize the reader's responsibility to actively question and weigh all alternatives.

Internet Resource: Wikipedia: The Free Encyclopedia at: <www.wikipedia.org>
Wikipedia: The Free Encyclopedia is a unique, freely available online information source in an encyclopedia format. One of its distinguishing characteristics is that it is open for anyone to contribute and edit; therefore, articles are only as accurate as the contributors have made them. The wiki community (wiki—pronounced "wickie" or "weekee") has safeguards against wild inaccuracy and vandalism built into its protocol, and often articles, as they go through the editing process, become very informative and well-balanced. However, there is controversy in the academic world as to whether anything in Wikipedia should be considered authoritative. Articles contain extensive links to other Wikipedia entries, and there are areas built in to discuss the article and to see the history of the entry. This is an excellent context for students to practise critical reading skills. The learning experience here could be extended to students creating their own Wikipedia contributions.

The contents are "copyleft"; that is, they "can be copied, modified, and redistributed as long as the new version grants the same freedoms to others and acknowledges the authors of the Wikipedia article used" (by a direct link).

Optional: If students have computer access, view the discussion behind this page. (Note: POV= point of view; NPOV= neutral point of view). Discuss how the contributors have attempted to reshape the article according to their understandings and viewpoints.

Outcomes

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 6.1.2 Use organizational planning...

SLO 6.1.4 Use functional planning...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.11 Use transfer...

SLO 1.4 Show awareness of organizational patterns...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.7 Use problem identification...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.1 Use resourcing to access...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.12 Use inferencing to guess the meanings...

Instructional and Learning Sequence

Writing Task

Have students write a short paragraph about a plant-animal combination they would like to see, making sure that each sentence connects with the previous one, and that each moves from given to new information.

Language Features

Structures

use of articles (review)

Discourse Features

given to new pattern

cohesive devices

Ask students to look at the chart on **Handout 3-20**: "Genetic Engineering: Thought Flow Exercise," which is a set of jumbled sentences from a two-paragraph passage from **Handout 3-19**: "Genetic Engineering—Introduction."

Using the clues in the sentences themselves, find sentence 1 of the first paragraph and draw an arrow to connect it to the second. Continue to sequence the sentences. What clues (discourse markers) help you? Where should the paragraph division be placed?

With the reassembled paragraph, discuss the pattern of given-new as it relates to other sentences in the reading.

Language Features

Academic Language Features

moving from given to new information

following the flow of text

Student Learning Tasks**Assignment**

Write a short paragraph about a plant-animal combination you would like to see. (I)

Look at the chart of jumbled sentences. Find sentence 1 of the first paragraph and draw an arrow to connect it to the second. Continue sequencing the sentences. (I)

Teacher Notes and References

Handout 3-19: "Genetic Engineering—Introduction"

Handout 3-20: "Genetic Engineering: Thought Flow Exercise"



The usual pattern in English sentences is to move from given or known information to new information. The known information often appears as the complete subject, with the new information forming the complete predicate.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.4 Show an awareness of organizational patterns...

SLO 4.1 Use language to encourage...

SLO 4.5 Experience and consider academic texts...

SLO 4.6 Respond to and critique a variety of individual perspectives

SLO 5.6 Evaluate texts...

SLO 6.23 Use grouping of items to classify...

SLO 6.24 Use note taking...

SLO 6.27 Use elaboration...

SLO 1.6 Interpret a range of texts...

SLO 3.1 Seek, organize, and synthesize information...

SLO 3.2 Develop and implement a plan for researching...

SLO 4.5 Experience and consider academic texts...

SLO 5.6 Evaluate texts...

SLO 6.21 Use resourcing to access...

SLO 6.212 Use inferencing to guess the meanings...

Instructional and Learning Sequence

Sequence 3

Discuss with the class the need to consider WHO says WHAT and TO WHOM when reading any type of informative writing, but especially when it is about something controversial.

Exercise 1

Reading critically. Explain to the class that they will be reading excerpts from different reports about genetically modified GM foods.

- Read one excerpt as a group and fill in the chart with information from the article. Discuss findings, focusing on the words that communicate attitude (tone).
- Read the other excerpts individually or together, and continue to fill in the chart.

Language Features

Academic Language Functions

reading critically
reading to determine main idea
considering audience, purpose, context

Exercise 2

Read an abstract. **Handout 3-21: "GM Foods—The Debate"** consists of abstracts drawn from a number of sources. Examine the format. What information do they give? Using the WHO, to WHOM, and WHAT model, determine the probable attitude of each article towards GM foods.

Language Features

Discourse Features

form of an abstract

Academic Language Functions

using key words to search a database
narrowing search terms
reading as abstract
determining writer's attitude

Student Learning Tasks

- a) Read one excerpt as a group. Fill in the chart. Discuss findings. (■)
- b) Read the other excerpts individually or together, and continue to fill in the chart. (■) (■)

Read **Handout 3-21**: "GM Foods—The Debate" and determine the probable attitude of each article covered using the "Who, What, and to Whom" model.

Teacher Notes and References



Provide students with other readings on GM foods. Find several short reports, either online or in magazines, of news and developments in GM foods. Be sure to include a variety of perspectives and audiences.

Is the report written from a first-hand perspective? Is it a research article written by scientists for other scientists? Is it written by scientists for the general public? Is it rewritten by a reporter for a popular publication (and does that publication have a stand)? Is it written by or for an organization that supports one side or another? Writers and readers do not always have the same goal—the critical reader is alert to the factors that may affect the transmission of information. It is important to read more than one point of view on an issue, if possible. A discussion could link to the concept of primary and secondary sources.



Handout 3-21: "GM Foods—The Debate"



When you are researching a topic, you may use a database or an index of publications. These may be general or specialized. Using your key words, you may find many more references than you can use. How do you narrow your search? The abstract or summary of an article should give you the topic, purpose, scope, and content of the writing. "Descriptive" abstracts do not give the conclusions or recommendations of the article, while "informative" abstracts do.

You should be able to discern the writer's attitude about the topic from the abstract.

Outcomes

SLO 2.1 Show sufficient control over linguistic structures...

SLO 3.1 Seek, organize, and synthesize information...

SLO 3.3 Quote from or refer to sources...

SLO 6.1.2 Use organizational planning...

SLO 6.1.4 Use functional planning...

SLO 6.2.13 Use recombination...

SLO 1.5 Examine and interpret various visual media...

SLO 5.1 Identify common themes and symbols...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.12 Use inferencing to guess the meanings...

Instructional and Learning Sequence

Writing Task

Have students write a paragraph that compares several different viewpoints on GM foods as reflected in the readings or the abstracts. Use several of the reporting verbs listed in this lesson.

Language Features

Discourse Features

- expressions of comparison
- use of reporting verbs

Viewing

Have students examine political cartoons about genetics. Discuss: How do cartoons help express the public's concerns?

Student Learning Tasks**Teacher Notes and References****Assignment**

Write a paragraph that compares several different viewpoints on GM foods as reflected in the readings or the abstracts. (I)

Examine political cartoons about genetics. How do cartoons help express the public's concerns? (C)

**Appendix 11: How to Analyze Editorial Cartoons**

Political cartoons on the topic of genetic engineering (teacher-provided); possible source: <<http://cagle.slate.msn.com/politicalcartoons/CanadaTour/main.asp>>. Search under "Topics" for "Genome."

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 5.4 Show understanding of the effect of cultural background...

SLO 6.2.2 Use repetition to imitate a language model...

SLO 6.2.7 Use elaboration...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 4.3 Use clear and respectful language...

SLO 5.2 Analyze and use the appropriate level of formality...

SLO 6.1.4 Use functional planning...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.3.2 Use co-operation...

SLO 2.4 Use the steps of the writing process...

SLO 4.1 Use language to support...

SLO 6.1.4 Use functional planning...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.2.7 Use elaboration...

Instructional and Learning Sequence

Optional Reading

Follow the instructions in the Teacher Notes and References column to prepare a short article of your choice on GM foods that uses some of the vocabulary previously introduced.

Ask students to read the article independently, noting the words in bold, and then complete a gapfill exercise.

Note: Readings that discuss activities around GM foods in the students' country of origin will be especially relevant. The goal is to recycle vocabulary.

Language Features

Vocabulary

academic words from the selected article

Optional Speaking

Have students informally debate GM foods.

Optional Extension

Students work in groups to design an informational brochure about an application of biotechnology that is used in food production in their home country or Canada.

Language Features

Discourse Features

expressions of agreement/ disagreement/concession
brochure design

Roundup

Have students write a paragraph in their journal, expressing their personal opinion on GM foods.

Learning Log

Name and describe one learning strategy you used successfully in this lesson.

Student Learning Tasks

Read independently, noting the words in bold, then complete a gapfill exercise based on the text. (I)

Informally debate GM foods. (C)

OR

Work in groups to design an informational brochure about an application of biotechnology that is used in food production in your country of origin or Canada. (G)

Assignment

Write a paragraph in your journal, expressing your personal opinion on GM foods. (I)

In a Learning Log, describe one learning strategy you used successfully in this lesson. (I)

Teacher Notes and References

A recent, short article on GM foods that uses some of the vocabulary previously introduced (teacher-provided). Prepare a version with academic words highlighted and a gapfill exercise by using the tools at "Using the Academic Wordlist" <www.nottingham.ac.uk/~alzsh3/acvocab/> or "Compleat Lexical Tutor" at: <www.lextutor.ca/> (choose the Vocabprofile).

Arguments for and against GM foods may be found at Wikipedia, at: <www.wikipedia.org>.



Biotechnology Attitudes Survey

On a scale of 1 to 4, mark your response to each statement.

Strongly agree	Agree	Disagree	Strongly disagree
1	2	3	4

a) Farmers have been doing genetic engineering for thousands of years as they breed traits they want in crops and livestock.	1	2	3	4
b) The potential danger in genetic engineering is far greater than the danger of using chemicals in agriculture.	1	2	3	4
c) Foods that contain genetically modified ingredients should be clearly labelled.	1	2	3	4
d) Genetic engineering may decrease the diversity of plant and animal species.	1	2	3	4
e) Improvements in food production achieved through biotechnology could help feed millions of hungry people.	1	2	3	4
f) It's acceptable to change genes between plant species and between animal species, but scientists should not change genes between plants and animals.	1	2	3	4
g) Scientists should not try to change the genes of human beings.	1	2	3	4
h) If I had a serious disease that could be treated by injecting me with genetic material from a frog, I would let the doctors treat me.	1	2	3	4
i) It would be acceptable to choose the characteristics of our children through genetic engineering, if it were possible.	1	2	3	4
j) Biotechnology research should be controlled by the government.	1	2	3	4



Genetic Engineering—Introduction

Genetic engineering, genetic modification (GM), and gene splicing (once in widespread use but now deprecated) are terms for the process of manipulating genes in an organism, usually outside of the organism's normal reproductive process.

It often involves the isolation, manipulation, and reintroduction of DNA into model organisms, usually to express a protein. The aim is to introduce new genetic characteristics to an organism to increase its usefulness, such as increasing the yield of a crop species, introducing a novel characteristic, or producing a new protein or enzyme. Examples are the production of human insulin through the use of modified bacteria and the production of new types of mice like the OncoMouse (cancer mouse) for research, through genetic redesign.

Since a protein is specified by a DNA segment or gene, future copies of that protein can be modified by changing the gene's underlying DNA. One way to do this is to isolate the DNA, cut it, and splice in a different DNA segment. Daniel Nathans and Hamilton Smith received the 1978 Nobel Prize in physiology or medicine for their isolation of restriction endonucleases, which are able to cut DNA at specific sites. Together with ligase, which can join together fragments of DNA, restriction enzymes formed the initial basis of recombinant DNA technology.

Naming

Genetic modification or genetic manipulation are claimed to be neutral and possibly more technically correct terms for what is claimed, controversially, to be genetic engineering. Opponents question whether the concept of "modification," with its implications of progress, are applicable here.

Many opponents of the use of the term "genetic engineering" argue the operations of genes in combination with cell biochemistry are rather poorly understood and sometimes lead to unexpected side effects.

Reluctance to recognize this field as "engineering" has become popular in the anti-globalization movement and safe trade movement, and is also widely held by most Green parties, and the major



parties of France and Germany, which have resisted any agricultural policy favouring genetically modified food. These groups tend to resist the label "engineer" as applied to such genetic modification most strongly.

Defenders of the term "genetic engineering" argue that animal husbandry and crop breeding are also forms of genetic engineering that use artificial selection instead of modern genetic modification techniques. It is politics, they argue, not economics or science, that causes their work to be closely investigated, and for different standards to apply to it than to other fields of engineering. These scientists, however, do not object to the term "genetic modification" as applied to what they do, although it is sometimes used to deny them the status of professionals serving society in an ethical manner, which is one implication of the term engineer.

The term "genetic engineering" is sometimes informally abbreviated as "genengineering."

Ethics

Genetic engineering proponents argue that the technology is not harmful and necessary for food production to continue to match population growth. However, some argue that it's not a problem of food production but of food distribution, and that the population growth is actually a result of uneven distribution of food (and wealth).

(continued)

Source: <http://en.wikipedia.org/wiki/Genetic_engineering>. This article is licensed under the <<http://www.gnu.org/copyleft/fdl.html>> GNU Free Documentation License.

Genetic Engineering Introduction (continued)

Others oppose genetic engineering on the grounds that genetic modifications may have unforeseen consequences, both in the initially modified organisms and their environments. For example, certain strains of maize have been developed that are toxic to plant-eating insects (e.g., bt corn). However, when those strains cross-pollinated with other varieties of wild and domestic maize, the relevant genes were passed on in unintended ways. This modified the very gene pool from which the maize was derived.

Anti-genetic-engineering groups propose that genetic releases such as this represent the opening of a Pandora's box which may ultimately accelerate the collapse of the modern system of agriculture, decreasing rather than increasing the food supply. They say that with current recombinant technology there is no way to ensure that genetically modified organisms remain under control, and the use of this technology outside of secure laboratory environments carries grave risks for the future.

Many also fear that certain types of genetically engineered crops will enable the elimination of all biodiversity in the cropland; herbicide-tolerant crops will for example be treated with the relevant herbicide to the extent that there are no wild plants ("weeds") able to survive, and plants toxic to insects will mean insect-free crops. This could result in major declines in other wildlife (e.g., birds), which depend on weed seeds and/or insects for food resources. The recent (2003) farm scale studies in Britain found this to be the case with GM sugar beet and GM oilseed rape, but not with GM maize (though in the last instance, the non-GM comparison maize crop had also been treated with environmentally damaging pesticides subsequently [2004] withdrawn from use in the EU).

Proponents of current genetic techniques as applied to food plants cite the benefits that the technology can have, for example, in the harsh agricultural conditions of third world countries. They say that with modifications, existing crops would be able to thrive under the relatively hostile conditions, providing much needed food to their people. While submitting that precautions should be made to ensure that any modified crops are contained, they say that their genetically engineered crops are not significantly different from those modified by nature or humans in the past, and by extension are not dangerous to other crops. The expansion of new croplands into areas currently too harsh to grow crops is also likely to have deleterious effects on the wildlife currently using these uncultivated areas. There is gene transfer between unicellular eukaryotes and prokaryotes. There have been no known genetic catastrophes as a result of this.

Economic and Political Effects

Many opponents of current genetic engineering believe the increasing use of GM in major crops has caused a power shift in agriculture towards biotechnology companies gaining far greater control over the production chain of crops and food than any previous industry, and over the farmers that use their products, as well.

Many proponents of current genetic engineering techniques believe it will bring higher yields and profitability to many farmers, especially those in third world countries.

In April 2004 Hugo Chávez announced a total ban on genetically modified seeds in Venezuela.

Genetic Engineering: Thought Flow Exercise

Start with sentence 1 and draw an arrow to connect the other sentences in the correct order. Underline the discourse markers that refer back to previous sentences or ideas. Compare your sequence with the original.

However, some argue that it's not a problem of food production, but of food distribution.

However, when those strains cross-pollinated with other varieties of wild and domestic maize, the relevant genes were passed on in unintended ways.

And that the population growth is actually a result of the uneven distribution of food (and wealth).

Others oppose genetic engineering on the grounds that genetic modifications may have unforeseen consequences, both in the initially modified organisms, and their environments.

For example, certain strains of maize have been developed that are toxic to plant-eating insects.

Genetic engineering proponents argue that the technology is not harmful and is necessary for food production to continue to match population growth.

This modified the very gene pool from which the maize was derived.

WHO	to WHOM	WHAT	COMMENT



GM Foods—The Debate

Scan the following abstracts taken from EBSCO, a research database. For each one, determine the main idea about GM foods in the article and how the ideas are developed. Which articles would be useful if you wanted to argue for or against GM foods? Does the WHO and TO WHOM affect the WHAT?

Note: The words **GM** and **foods** are in bold because those were the search terms used.

Note: The *Lancet* is a British medical journal.

Title:	Europe imposes strict GM-food laws.
Subject(s):	<u>GENETICALLY modified foods—Government policy; LABELS—Law & legislation; COMMERCIAL policy; CONSUMER protection—Law & legislation; PRODUCT safety; TRADE regulation; FOOD law & legislation; EUROPEAN Parliament</u>
Source:	<u>Lancet</u> , 7/12/2003, Vol. 362 Issue 9378, p135, 2/3p, 1c
Author(s):	<u>Bosch, Xavier</u>
Abstract:	Reports that the European Parliament approved two proposals that established as system to trace and label food and feed products made with genetically modified ingredients. Argument of environmental groups that there is no evidence showing genetically modified foods are safe in the long-term; Reaction of the U.S. government; Praise of the Parliament's decision by Greenpeace.

Note: *New Scientist* is a British magazine that reports science developments to the educated public.

Title:	UN is slipping modified food into aid.
Author(s):	<u>Pearce, Fred</u>
Source:	<u>New Scientist</u> ; 9/21/2002, Vol. 175 Issue 2361, p5, 3/4p, 1c
Document Type:	Article
Subject(s):	<u>GENETICALLY modified foods</u> <u>FOOD relief</u> <u>UNITED Nations.—World Food Program</u> <u>DROUGHTS</u>
Abstract:	Focuses on the genetically modified food (GM) serving as emergency aid from the United Nations World Food Program. Countries receiving the aid; Allegations that the U.S. is exploiting the drought in Southern Africa to drum up markets for its unsold GM maize and soya; Rejection of Zambian president Levy Mwanawasa on the GM food aid.

(continued)

GM Foods—The Debate (continued)

Note: The World Health Organization is a United Nations agency.

Title:	<i>UN to help developing countries assess safety of GM crops.</i>
Author(s):	<u>Hagmann, Michael</u>
Source:	<u>Bulletin of the World Health Organization</u> ; 2002, Vol. 80 Issue 4, p336, 3p
Document Type:	Article
Subject(s):	<u>GENETICALLY modified foods</u> <u>HEALTH risk assessment—Developing countries</u> <u>UNITED Nations—Environmental policy</u> <u>AGRICULTURAL biotechnology—Developing countries</u>
Abstract:	Reports on the attempts of the Nairobi, Kenya-based United Nations Environmental Program to <i>help developing countries assess the safety</i> of genetically modified (<i>GM</i>) <i>crops</i> . Principles of risk assessment for <i>GM</i> foods; Application of agricultural biotechnology to reduce world poverty; Increase in public investment in poverty-oriented agricultural research.

Note: What does the title of the following publication imply? What do you think the title of the article is trying to say?

Title:	<i>Pharming</i>
Subject(s):	<u>GENETICALLY modified foods</u> ; <u>FOOD—Health aspects</u> ; <u>AGRICULTURAL innovations</u>
Source:	<u>Canada & the World Backgrounder</u> , Mar2002, Vol. 67 Issue 5, p21, 6p, 1bw
Abstract:	Deals with the proliferation of genetically modified (<i>GM</i>) crops or <i>foods</i> around the world. Percentage of store-bought processed-foods with <i>GM</i> components in Canada; Arguments advanced by companies on the negative effect of switching back to conventional seeds; Health problems associated with GM food; Extent of consumer movement against <i>GM foods</i> . INSET: ACCIDENTS DO HAPPEN.

Note: *Hydrocarbon Processing* is a magazine for the petrochemical processing industry. What interest might its members have in this discussion?

Title:	<i>UN to help developing countries assess safety of GM crops.</i>
Author(s):	<u>Whetton, Cris</u>
Source:	<u>Hydrocarbon Processing</u> ; Jun99, Vol. 78 Issue 6, p119, 5p, 1bw
Document Type:	Article
Subject(s):	<u>TRANSGENIC plants</u> <u>FOOD—Health aspects</u> <u>GREAT Britain</u>
Abstract:	Comments on the British public's concerns about genetically modified (<i>GM</i>) <i>foods</i> . Role of activist groups, environmentalists and mass media in popularizing adverse information about <i>GM foods</i> ; Lack of proof that the risks of eating <i>GM foods</i> are any greater than the risks of eating unmodified <i>foods</i> such as eggs, pork, rhubarb and potatoes.

(continued)

GM Foods—The Debate (continued)

Note: Who is the intended audience for this article?

Title:	Effect of diets containing genetically modified potatoes expressing <i>Galanthus nivalis</i> lectin on rat small intestine.
Subject(s):	<u>TRANSGENIC plants</u> ; <u>POTATOES—Genetic engineering</u> ; <u>LECTINS—Physiological effect</u> ; <u>GASTROINTESTINAL system</u>
Source:	<u>Lancet</u> , 10/16/99, Vol. 354 Issue 9187, p1353, 2p, 2 charts
Author(s):	<u>Ewen, Stanley W.B.</u> ; <u>Pusztai, Arpad</u>
Abstract:	Diets containing genetically modified (GM) potatoes expressing the lectin <i>Galanthus nivalis</i> agglutinin (GNA) had variable effects on different parts of the rat gastrointestinal tract. Some effects, such as the proliferation of the gastric mucosa, were mainly due to the expression of the GNA transgene. However, other parts of the construct or the genetic transformation (or both) could also have contributed to the overall biological effects of the GNA- GM potatoes, particularly on the small intestine and caecum. [ABSTRACT FROM AUTHOR]

Note: *Consumers' Research Magazine* is a Canadian independent magazine that offers practical advice to the general public.

Title:	Biotech Foods : Right to Know What?
Subject(s):	<u>FOOD—Labeling</u> ; <u>UNITED States.—Food & Drug Administration—Rules & practice</u> ; <u>UNITED States</u>
Source:	<u>Consumers' Research Magazine</u> , Oct99, Vol. 82 Issue 10, p10, 5p
Author(s):	<u>Spencer, Peter</u>
Abstract:	Discusses the labeling of genetically modified (GM) foods in the United States. Definition of extra ingredients in food ; Reason for the clamor on the widespread and growing use of biotech-derived corn and soy ingredients in food products; Key factors behind the labeling mandates of the United States Food and Drug Administration.

Note: *Nation* is a U.S. news magazine, generally on the left politically.

Title:	GM 'Assistance' for Africa.
Subject(s):	<u>GENETICALLY modified foods</u> ; <u>AGRICULTURE & state</u> ; <u>FOOD—Biotechnology</u> ; <u>HUMANITARIAN assistance, American</u> ; <u>FOOD relief</u> ; <u>EXPLOITATION</u>
Source:	<u>Nation</u> , 8/4/2003-8/11/2003, Vol. 277 Issue 4, p7, 2p
Author(s):	<u>Kanoute, Amadou</u>
Abstract:	The author asserts that the administration of United States President George W. Bush is promoting biotechnology in Africa in order to provide so-called development assistance for U.S. farmers and to create new markets and business opportunities for U.S. agricultural businesses, but not, as it stated, to aid Africans. In late June, 2003 Bush spoke of Africa as a famine-stricken continent where the people are unable to grow enough food for themselves. According to the President, African farmers need biotechnology—and therefore should give a warm welcome to GM (genetically modified) seeds and foods supplied by U.S. agribusiness. (These announcements

(continued)

GM Foods—The Debate (continued)

coincided with the U.S. decision to proceed with a World Trade Organization suit against the European Union on genetically modified *foods*.) Bush's assumptions are not accurate. Of course, some Africans are starving and many are chronically, poor, sick and hungry. But most Africans manage well in a difficult situation—growing crops that are adapted to their environment, with limited technology. Africans need many things to improve their lives—but biotechnology agriculture is not one of them. The insistence on using genetically modified (*GM*) corn as *food* aid rather than giving untied funds illustrates that “development assistance” is aimed at U.S. farmers rather than African needs. Unable to sell *GM* crops in the wider market, the United States prefers to subsidize surplus output as “*food* relief.” *GM* seed varieties have been of marginal benefit to American farmers, so they are likely to be even less beneficial in Africa, where around 70 percent of farmers are small-scale producers, saving seed from year to year. The challenge for African governments is to regulate and control the introduction of *GM food* and to adopt high standards of safety for *GM* products.

Note: The *Economist* is a general news magazine out of Great Britain.

Title:	Far less scary than it used to be.
Subject(s):	<u>GENETICALLY modified foods</u> ; <u>PUBLIC opinion</u> ; <u>CROPS—Genetic engineering</u> ; <u>PLANT genetic engineering</u> ; <u>FOOD—Safety measures</u>
Source:	<u>Economist</u> , 7/26/2003, Vol. 368 Issue 8334, p23, 3p, 2 graphs, 2c
Abstract:	In Rochford, east of London, two dozen people gathered recently to discuss their hopes and fears about genetically modified (<i>GM</i>) <i>food</i> . The assembled housewives, pensioners and farmers listened politely to a handful of guest speakers, and then they fired off questions: How can you be sure that <i>GM food</i> is safe to eat? The meeting in Rochford was one of more than 450 public gatherings in a month-long consultation exercise called “ <i>GM</i> Nation?”. The exercise, which ended last week, is only one of several studies commissioned by the British government. Earlier this month, the Cabinet Office, a government department, published an assessment of the costs and gains of Britain embracing, or rejecting, <i>GM</i> agriculture. This week, a group led by the government's chief science adviser published a review of the scientific evidence of the risks and benefits of <i>GM</i> crops. The last time Britain saw such a flurry of interest in <i>GM food</i> was in 1999, when a series of events turned much of the population against “Frankenfoods” and drove the stuff from supermarket shelves. At issue are two broad types of genetic modification, which account for 99% of the almost 59m hectares of <i>GM</i> crops in commercial cultivation. One, called Bt, takes a gene from a bacterium and puts it in plants to give them resistance to certain insects without the use of chemical pesticides. The other uses genes also from bacteria and gives plants resistance to particular herbicides, such as glyphosate.

**Senior 4 ELA:
EAL for Academic Success**

**Module 3: Promise and Peril:
The Impact of Modern Technology**



Topic 5B
Biotechnology:
Spider Silk

(1 lesson)

This lesson revisits the idea of learning from nature. Students practise listening for main ideas and details, and synthesizing information to write a summary of a topic.

Outcomes

SLO 4.1 Use language to encourage...

SLO 6.2.7 Use elaboration...

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 6.1.4 Use functional planning...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.2.2 Use repetition to imitate a language model...

SLO 6.2.4 Use note taking...

Instructional and Learning Sequence

Sequence 1

Activation

Review the article from Topic 2: "Peter Parker's Alter Ego," and discuss scientists' efforts to duplicate nature. What other abilities did Spider-man have? (could spin a web) Ask students what they know about spiderwebs.

Listening and reading aloud: **Handout 3-22:** "GM Spider Silk Spun by Canadian Company." Pre-teach any necessary vocabulary with pronunciation.

- Read the article aloud as an item for news broadcast. Read once for main ideas; read a second or third time for students to listen and take notes on Who, What, Where, When, and Significance, and then check with written copy. Underline the important facts in this article with a coloured pen.
- Optional speaking: Students practise reading portions of the article aloud, paying particular attention to the stress on content words and to final sounds.

Language Features

Vocabulary

spin, web, silk, sutures, armour, cultures (growth medium), domestication, mimicking, Holy Grail, aqueous, biodegradable, BioSteel®, protein, fibres, squeeze, udder, exclusive, fund, inserted, issue, journal, licence, medical, military, modified, process

Pronunciation

stress on content words, final sounds

Academic Language Functions

listening for main ideas

Student Learning Tasks

Discuss what you already know about spiderwebs.

- a) Listen and take notes on Who, What, Where, When, and Significance, as the teacher reads **Handout 3-22**: "GM Spider Silk Spun by Canadian Company."
- b) Underline the important facts in this article with a coloured pen.

Optional Task

Practise reading portions of the article aloud, paying particular attention to the stress on content words.

Teacher Notes and References

Handout 3-22: "GM Spider Silk Spun by Canadian Company"

Optional listening: CBC *Quirks and Quarks* radio broadcast "Artificial Spider Silk," available as MP3 at:
<<http://radio.cbc.ca/programs/quirks/archives/01-02/jan1902.htm>>

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 1.5 Examine and interpret various visual media...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 3.1 Seek, organize, and synthesize information...

SLO 3.3 Quote from or refer to sources...

SLO 6.1.2 Use organizational planning...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.9 Use summarization...

Instructional and Learning Sequence

Reading and Writing Task

Students read "Genetically Altered Goats Produce Spider Silk" (see Teacher Notes and References) and examine **Handout 3-23: "The History of Spider Silk"** (the chart that follows), and then reread the first article, **Handout 3-22: "GM Spider Silk Spun by Canadian Company."**

Students then write a 250-word summary of the essential information from the two readings and the chart.

Assist students, if necessary, to combine the information from the two readings and the chart. Decide which facts are important and which are just interesting. If desired, use the opportunity to practise in-text documentation of sources according to a recognized style (MLA, APA).

Language Features

Structures

reduction of relative adjective clauses to adjective phrases

Discourse Features

summary

Academic Language Functions

citing sources

synthesizing information from multiple sources

Student Learning Tasks

- a) Read "Altered Goats Produce Spider Silk" and reread the first article (**Handout 3-22: "GM Spider Silk Spun by Canadian Company"**). (I)
- b) Write a 250-word summary of the essential information from the two readings and the chart. (I)

Teacher Notes and References

Handout 3-23: "The History of Spider Silk" (chart)

Internet Resource:

"Genetically Altered Goats Produce Spider Silk" <www.howstuffworks.com/news-item38.html>

Optional Internet Resources: "The Biology of . . . Spider Silk Arachnomania" (the race to synthesize the world's strongest fibre) at: <www.discover.com/Sept_01/featbiology.htm>

"Biology Fundamentals" (includes a detailed description of the history, characteristics, and potential of bioengineered spider silk) at: <www.nexiabiotech.com/en/03_bio/05.php>



GM Spider Silk Spun by Canadian Company

MONTREAL – Genetically modified goats could soon produce milk loaded with spider silk tough enough to be used as body armour yet fine enough for medical sutures. Researchers at Quebec-based Nexia Biotechnologies have produced spider silk in mammalian cell cultures and found a way to spin it.

Spiders produce one of the toughest biological materials in their webs. Nexia is developing its silk for medical, military and industrial markets.

Unlike silkworms, spiders have resisted domestication. So the researchers copied the genes spiders use to make silk and inserted the genes into cells taken from cow's udders and hamsters to test if the process worked. In Friday's issue of the journal *Science*, the researchers report the cells produced the spider silk and they were able to squeeze it out.

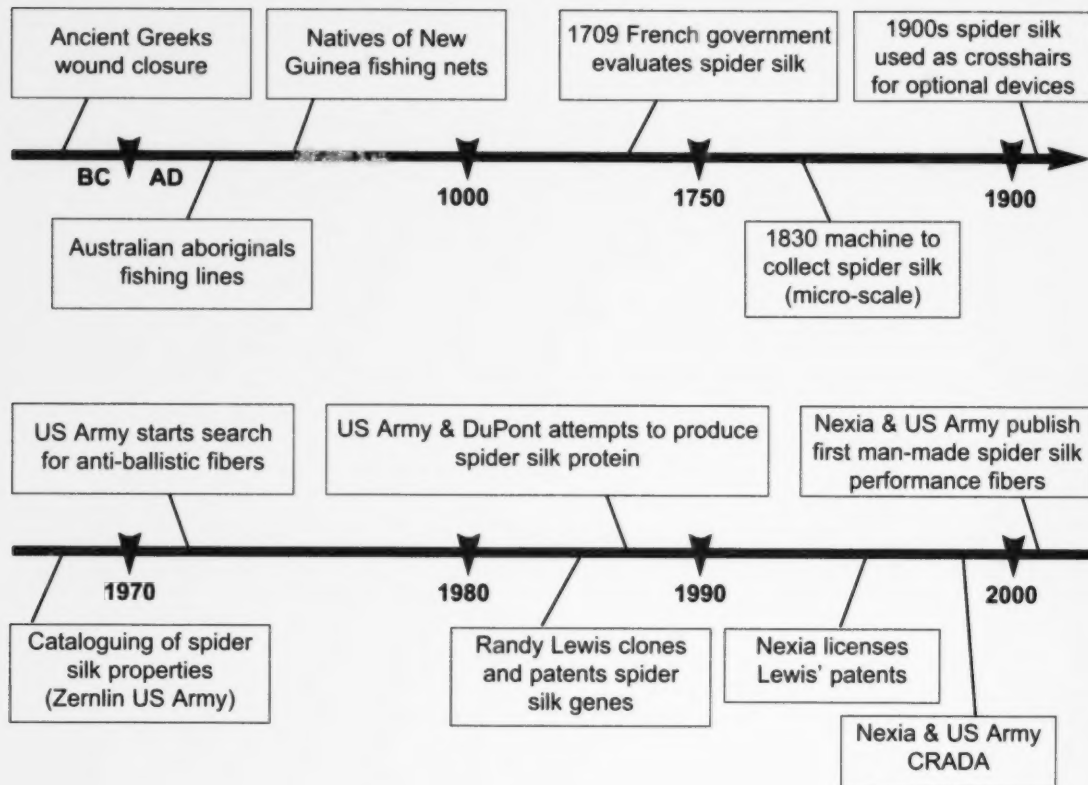
Nexia president and chief executive officer Jeffrey Turner calls the product BioSteel®. "Mimicking spider silk properties has been the Holy Grail of material science for a long time and now we've been able to make useful fibres," Turner said in a release. The fine silk proteins were spun from an aqueous solution and are probably biodegradable, Turner said.

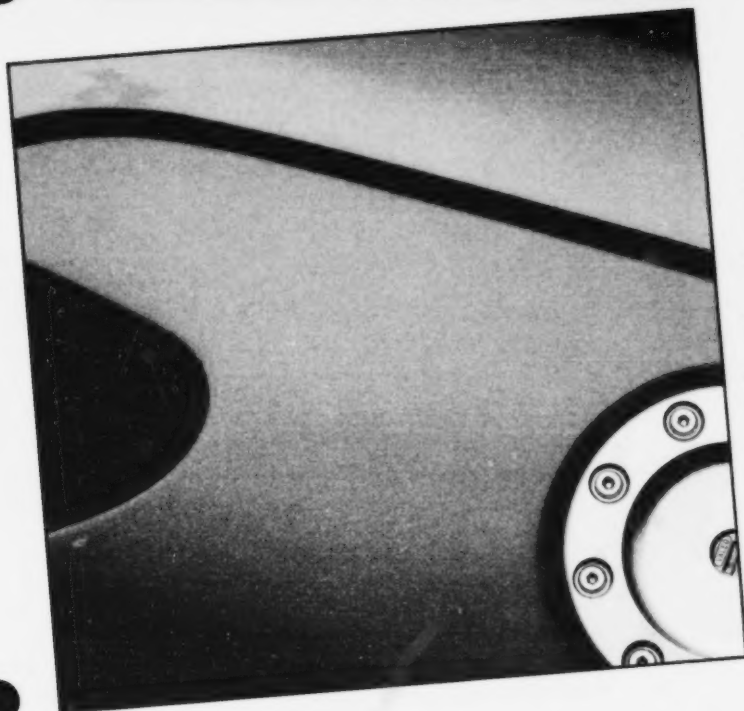
Their next step is to make the silk in large amounts for commercial purposes. The female genetically modified goats can act like silk protein factories when they give birth and start producing milk in February. Nexia has an exclusive licence to the spider silk genes and patents on the culturing, purifying and spinning systems. The Canadian Department of National Defence and the U.S. Army both helped fund the research.



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The History of Spider Silk





Topic 6

**Technology and
Transportation:
To Drive or to Heat,
That Is the Question**

(1 lesson)

This lesson focuses on technology and transportation in terms of hydrogen-fuel-cell cars. It also connects to the last module by discussing some environmental issues addressed by using the hydrogen cell as an environmentally friendly source of power. Students will read a prediction from the past about electric cars and discuss hydrogen as a possible fuel source. They will listen to an article about cars powered by hydrogen fuel cells as they record point-form notes and questions about the article. Finally, they will create a variety of sentences and

convert them into a short essay with an introduction and conclusion. Some of the other main academic tasks are: listening for key vocabulary; deducing the meanings of unfamiliar words and word groups; selecting relevant information and ignoring irrelevant information; describing similarities and differences; agreeing and disagreeing; making suggestions; using grammatical and lexical cohesive devices in writing, summarizing, planning, and organizing an essay; writing introductions and conclusions; and revising and proofreading.

Outcomes	Instructional and Learning Sequence
SLO 1.5 Examine and interpret various visual media... SLO 2.1.3 Use developing control of grammatical features... SLO 2.1.4 Refine pronunciation to increase intelligibility... SLO 4.1 Use language to encourage... SLO 6.2.5 Use deduction and induction... SLO 6.2.7 Use elaboration... SLO 6.2.8 Use imagery in the form of mental or actual pictures... SLO 6.2.12 Use inferencing to guess the meanings... SLO 6.3.2 Use co-operation...	Sequence 1 Activation This is an active-listening, note-taking, formal writing lesson. The active listening/note-taking portion of the lesson helps students practise skills necessary for taking notes during lectures. Step 1: a) Activate prior knowledge by referring students to the environmental module and the experiment about anthropogenic greenhouse gases emitted by cars. What did they learn about the damage caused to the environment? Introduce the idea of alternate fuel sources, like electricity. Refer to Handout 3-24: "Plug in a Car and Give It Some Juice"/Quotation." b) Have one or two students read the article out loud. Point out the fact that, even in the past, people were thinking of ideas that are relevant today. Step 2: Ask students if they know of any other alternate fuel sources. (hydrogen) Have one or two students read the quotation by Peter Schwartz and Doug Randall out loud. c) Discuss the article. Using the visuals, ask students what they know about hydrogen-cell-fuelled cars. How is hydrogen a friendly alternative to oil and gas? Record all responses and new vocabulary on the board or overhead. In the discussion, try to encourage students to come up with as much of the vocabulary as possible that will help them with the listening activity. Lead them and record vocabulary on the board. Provide necessary vocabulary when you are discussing the visuals. Discuss new key vocabulary. Remember, the new key vocabulary words should be on the board or overhead.

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Student Learning Tasks

- a) Discuss the damage to the environment caused by anthropogenic greenhouse gases emitted by cars. (C)
- b) One or two students read **Handout 3-24**: “Plug In a Car and Give It Some Juice”/Quotation” out loud. (I)
- c) Discuss the article and brainstorm for information about hydrogen-cell-fuelled cars. Note new vocabulary specific to this topic. (C)

Teacher Notes and References

Handout 3-24: “Plug In a Car and Give It Some Juice”/Quotation”

Appendix 16: How to Write a TQT (Text Questioning Technique) Lesson

Visuals of hydrogen-cell-fuelled cars (teacher-provided). Find different models and at least one that shows the hydrogen fuel cell itself.



This is a Foresee lesson called a TQT, or Text Questioning Technique lesson (see Appendix 16). Students will listen to the teacher read an article, and answer questions in point form as they listen.

Before the class, decide which vocabulary words in the article may give students problems, and devise ways of drawing out as many words as possible through the introductory discussion. Some vocabulary will have to be provided and explained before the reading is done.

Outcomes

SLO 2.1.3 Use developing control of grammatical features...

SLO 4.2 Communicate effectively to work with others...

SLO 6.2.11 Use transfer...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

- d) Tell students that they will be listening to an article about hydrogen-cell-fuelled vehicles. They must answer certain questions in point form while doing this. Ask them to tell you the kind of strategies they will use as they listen. They could discuss this in pairs and then as a whole class, or simply as a whole class. They should mention selective attention, directed attention, self-monitoring, self-evaluation, note taking, problem solving, and inferencing. Refer to the complete list of strategies for more ideas.

(continued on page 150)

Language Features

Discourse Features

expressions to agree, disagree, question, restate, summarize, etc.

Vocabulary

Environmental terms and vocabulary introduced in the last module: pollution-free, environmentally friendly, by-products, emissions, hydrogen, oxygen, chemical reaction, environmentalists, emit, element, renewable resource, viable solutions, molecules

Connected with hydrogen and hydrogen-cell-fuelled vehicles: cylinder, catalyst, platinum, cold combustion, monopolized, volumes, extricated, synthesized, splitting water molecules, transports, derived, hybrids, primary and secondary fuel source, carbon-fibre-wrapped aluminum tanks, gaseous, battery, ultracapacitor, positive and negative charges, generate, equation, vehicle-to-grid capability, stationary generator, overabundance, hydroelectricity, electrolysis, commercial viability, convergence

Idiom: "Give it some juice."

Pronunciation

sounds: th, r, l, final s, different pronunciations of ed endings and other problematic sounds for students; linkage; stress (accented syllables); rhythm

Student Learning Tasks

- a) Listen as an article about hydrogen-cell-fuelled vehicles is read. (I)
- b) Discuss the strategies used in this listening task. (G) (C)

Teacher Notes and References



Appendix 1: Strategies for
Second Language Acquisition

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.1.2 Use standard Canadian spelling...

SLO 6.1.1 Use advanced organization...

SLO 6.1.2 Use organizational planning...

SLO 6.1.5 Use selective attention...

SLO 6.1.7 Use problem identification...

SLO 6.2.11 Use transfer...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

e) Give the students **Handout 3-25: "Questions: To Drive or To Heat, That Is the Question."**

- In pairs, have them read through the questions, looking for problematic words or phrases and trying to guess the meanings.
- Discuss the vocabulary as a class. Have students analyze the questions, predicting what key words they will have to listen for to answer the questions as the passage is read.

Remind students this will be a note-taking activity, so they can get the main points down in any form that works for them; any kind of shorthand will work. If they don't know a specific word, even writing down the first few letters will help.

Encourage students to use the shorthand symbols learned in the first module and perhaps in the text-messaging lesson in this module. Also, remind them that much of the key vocabulary will be recorded on the board for them to refer to.

- Tell students you will read the article slowly the first time and more quickly the second. If they need a third reading, it will be at normal speed. Remind students that you will not stop to answer questions or repeat while you are reading. They must do their best to record as much as possible as you read straight through.
- Also, tell them that after the readings they will eventually get to check their notes against the written article.

(continued on page 152)

Language Features

Pronunciation

new vocabulary

Academic Language Functions

predicting

Student Learning Tasks

- e) In pairs, read through the questions, look for problematic words or phrases, and try to guess the meanings. (6)
- f) Discuss the vocabulary, analyze the questions, and predict the key words to listen for. (6)

Teacher Notes and References



Handout 3-25: "Questions: To Drive or to Heat, That Is the Question"

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.4 Show awareness of

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.3.1 Use the structures and language features...

SLO 6.1.3 Use directed attention...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.7 Use problem identification...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.4 Use note taking...

Instructional and Learning Sequence

- f) Read the article **Handout 3-26: "To Drive or to Heat, That Is the Question"** slowly at first, giving a short wait time between sentences so students can process what they are hearing. At the end of the first reading, check with students to find out how they did. Most will need a second and maybe a third reading.

After completing the reading:

- Pair students to compare their answers. Then, give each pair a copy of the article so they may check their answers again. They may change their answers, but they must keep them in point form. Collect the article from students.
- Then, using the words from the questions and using a different-coloured pen for visual clarity, model and discuss with students how to create complete sentences from point-form notes. (See **Handout 3-27: "Creating Sentences from Notes Using Coloured Code"** for an example.)
- Moving one step further, have students work in small groups to look at different ways sentences can be combined so that the answers are not a list of simple sentences. Do several with the class using colour coding to show examples of sentence combining.
- Then lead them to complete their sentences individually.

Language Features

Structures

use of coordinate and subordinate conjunctions, types of clauses, reversal of natural order, semicolons, etc. (review)

Student Learning Tasks

- f) Listen and make notes on the main points as the article is read. (I)
- Compare your answers with a partner. (II) Check your notes against the written article. (I)
 - Go over the point-form answers. (C)
 - Discuss how to create complete sentences from your point-form notes. (C)
 - Complete your sentences individually. (I)

Teacher Notes and References

Handout 3-26: "To Drive or to Heat, That Is the Question"
(teacher resource)

Handout 3-27: "Creating Sentences from Notes Using Coloured Code"

Provide mini-lessons on sentence combining as required.

Outcomes

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.1.2 Use standard Canadian spelling...

SLO 2.3.1 Use the structures and language features...

SLO 2.3.2 Demonstrate increasing awareness of... rhetorical forms...

SLO 2.4 Use the steps of the writing process...

SLO 6.2.7 Use elaboration...

SLO 6.2.13 Use recombination...

SLO 6.3.2 Use co-operation...

SLO 6.1.2 Use organizational planning...

SLO 6.1.5 Use selective attention...

SLO 6.2.1 Use resourcing to access...

SLO 6.2.5 Use deduction and induction...

Instructional and Learning Sequence

Writing

Students use their answers to create a short article about hydrogen-cell-fuelled cars. They will add an introduction and conclusion and will use a variety of sentence forms. They should also use at least five new vocabulary words. This article will be handed in for marking after peer editing.

Roundup (optional)

Students could do research on:

- solving the hydrogen storage problem
- producing hydrogen through renewable, carbon, and nuclear energy sources
- costs of making, maintaining, and running hydrogen-cell-fueled vehicles
- other future environmentally friendly uses for hydrogen

The research could be summarized as a written or oral report, subject to the teacher's discretion.

Student Learning Tasks**Teacher Notes and References****Assignment**

a) Write a short article about hydrogen-cell-fuelled cars.
Include an introduction and conclusion. (1)

b) Peer-edit the articles. (6)

Research and prepare a written or oral report summarizing
information gathered about hydrogen as an energy source.



"Plug in a Car and Give It Some Juice"/Quotation

by Matt Villano

Dan Bocek of Burbank, California, begins his daily morning commute by unplugging his car from an electrical outlet in his garage. Then he drives 30 miles to his office in Alhambra and plugs it in again.

Bocek's wife drives a gasoline-powered car, and at the end of every month, he says, the two compare expenses. Hers costs them about \$80 a month; his costs only \$4.

If only Thomas Edison could see the Bocek family today. In 1919, while he commercialized an electric battery of his own, Edison predicted widespread popularity for electric cars like Bocek's. Edison's battery ran on a direct current, and from his laboratory in West Orange, N. J., he said the invention could be the key to cheaper, more efficient transportation. "In fifteen years, more electricity will be sold for electric vehicles than for light," he said.

Source: <<http://future.newsday.com/4/fbak0430.htm>>. [28 June, 2003].

Quotation

"The cost of oil dependence has never been so clear... Oil is an indulgence we can no longer afford, not just because it will run out or turn the planet into a sauna, but because it inexorably leads to global conflict... What we need is a massive, Apollo-scale effort to unlock the potential of hydrogen, a virtually unlimited source of power... The technology is at the tipping point."

—Peter Schwartz and Doug Randall from *Wired*'s cover story in April 2003, "How Hydrogen Power Can Save America"

Source: The Hydrogen Economy.



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http://www.stuartenergy.com/media_center/photo_gallery.html.



Questions: To Drive or to Heat, That Is the Question

1. Name three companies marketing the pollution-free hydrogen fuel cell vehicle.
 - a. _____
 - b. _____
 - c. _____

2. a. What two things do these environmentally friendly cars combine to make electricity?
 - i. _____
 - ii. _____b. What two byproducts are left?
 - i. _____
 - ii. _____

3. When hydrogen gas is combined with oxygen and a catalyst, such as platinum, what is the resulting chemical reaction called?

4. Who is impressed with these vehicles because they omit no pollution?

5. a. How much of the world's oceans is made up of hydrogen?

b. What remains a problem?

6. Name two ways hydrogen gas can be obtained or produced.
 - a. _____
 - b. _____

(continued)

Questions: To Drive or To Heat, That Is the Question (continued)

7. Hybrid vehicles have a secondary fuel source to help with what two things?

a. _____

b. _____

8. Under how much pressure is the hydrogen used as the primary source of fuel?

9. Name two types of secondary sources.

a. _____

b. _____

10. a. What company is testing a prototype heavy-duty transit bus to be propelled by a hydrogen fuel cell?

b. In what city and province will this occur?

c. What is the significant new function this bus will offer?

d. List one reason Manitoba could be an important player in this process.

e. What is important about electricity that comes from a renewable source?

To Drive or To Heat, That Is the Question (continued)

The vehicle of tomorrow is finally becoming a choice for today. The pollution-free hydrogen-fuel-cell vehicle is being marketed by successful car companies such as Toyota, Ford, and Honda. Daimler Chrysler is creating them in Europe. These environmentally friendly cars, which combine hydrogen from a tank and oxygen from the air to make electricity, leave as their only byproducts air and water. Amazing. But what if there were other uses for these vehicles? Imagine being able to travel pollution-free and use the same vehicle to heat your home!

First, a little background about the hydrogen cell as a fuel source. Essentially, hydrogen gas contained in a cylinder is combined with oxygen and a catalyst, such as platinum. The resulting chemical reaction, referred to as cold combustion, produces electricity to drive an electric motor. Environmentalists are impressed with the technology because hydrogen-powered vehicles emit no pollution at the point of use. In addition, hydrogen is the most abundant element in the universe, making up two-thirds of the oceans of the world; it cannot be monopolized by any country. Unfortunately, producing high volumes of hydrogen cleanly and efficiently for fuel cells remains a problem. The gas can be extricated from oil or natural gas or synthesized by splitting water molecules with electricity. However, such hydrogen merely transports energy derived from another fuel cell. Major automakers world-wide are feverishly researching to find viable solutions to these problems.

Most fuel-cell vehicles today are hybrids; that is, they have a secondary fuel source in addition to their fuel cell to help with acceleration and hill-climbing. The primary source, the hydrogen fuel cell, consists of one or more carbon-fiber-wrapped aluminum tanks filled with gaseous hydrogen at the pressure of 3,600 to 5,000 pounds per square inch. A fuel cell likes to run at a steady load, so when a driver must accelerate, it helps to have a secondary power source to give the necessary boost. Most companies use a battery as the secondary power source; however, Honda uses an ultracapacitor that stores energy in a physical form—on a pair of metal plates that accumulate positive and negative charges—rather

than in a chemical form, as batteries do. Drivers who have test-driven these hybrid vehicles find their performance on the road quite impressive.

So how does this environmentally friendly vehicle become a heat source? In Winnipeg, Manitoba, New Flyer Industries will be testing a prototype heavy-duty transit bus to be propelled by a hydrogen-fuel-cell engine made by Hydrogenics Corporation of Mississauga, Ontario. The bus offers a significant new function: its engine is so efficient that even when the vehicle is at rest, it can still be used to generate energy. This engine is also a hybrid and uses the ultracapacitor as the secondary power source. The Hydrogenics design takes the equation one step further. The engine will have a vehicle-to-grid capability to allow it to act as a stationary generator while at rest. So, while simply sitting in the garage or parking lot, this engine could potentially be running and providing electricity.

Manitoba could become an important player in this whole process. Since hydrogen is not naturally available and must be created, Manitoba's overabundance of hydroelectricity could be crucial. Electricity is one of the best ways to create hydrogen through the process of electrolysis, which separates the hydrogen and oxygen molecules in water. If the electricity comes from a renewable source, such as wind, solar, or hydro generation, then voila! We have an emission-free vehicle running on a fuel that was produced through an emission-free process. Icing on the cake!

The bus that functions as a stationary generator is still five years away from commercial viability (2008). Still, the convergence of water, power, and optimism has Hydrogenics-New Flyer looking toward the future. Who knows? Maybe one day soon, Manitobans will be comfy and cozy in their warm little houses on those long, cold winter nights because of the cars in their garages!

Sources: "Future auto to keep home warm, lit up" *Winnipeg Free Press*. 7 Dec. 2002. "The Car of Tomorrow." *Discover*. 18 and 20 (Oct. 2002).



Creating Sentences from Notes Using Coloured Code

When working with students through the answers to a TQT lesson, as you move from point-form notes to simple sentences and, finally, to more complex sentences, use colour-coding for visual clarity. When modelling sample questions on the overhead:

1. Write the questions in one colour.
2. Write the point-form answers contributed by the students in another colour.
3. Have students discuss how to use words and phrases from the questions in combination with their point-form answers to create grammatically correct, complete sentences. Underline the appropriate parts of the questions and draw arrows to show how to combine these words and phrases with the point-form notes. Use a third colour for this step.
4. Students use sentence-combining to combine answers from questions with several parts or answers from related questions. Have students suggest a variety of ways to combine sentences. Record these options in another colour, or choose specific colours to record each different option. Again, it may be necessary to use arrows for visual clarity. Do as many examples as are appropriate for the students. Then, have them complete the assignment themselves.

Students decide how they want to combine their answers to create their final product, which could be a written as paragraph or a series of paragraphs.



Note: With advanced students who already know how to do Step 3, it may only be necessary to focus on the sentence-combining.

Example:

1. Name three companies marketing the pollution-free hydrogen fuel cell vehicle.

a. Toyota

b. Ford

c. Honda

2. a. What two things do these environmentally friendly cars combine to make electricity?

i. hydrogen

ii. oxygen

b. What two byproducts are left?

i. air

ii. water

Three companies - Toyota, Ford, and Honda - are marketing the pollution-free hydrogen fuel cell vehicle, which combines hydrogen and oxygen to make electricity, leaving only air and water as by-products.

Example:

1. Name three companies marketing the pollution-free hydrogen fuel cell vehicle.

a. Toyota

b. Ford

c. Honda

2. a. What two things do these environmentally friendly cars combine to make electricity?

i. hydrogen

ii. oxygen

b. What two byproducts are left?

i. air

ii. water

Three companies - Toyota, Ford, and Honda - are marketing the pollution-free hydrogen fuel cell vehicle, which combines hydrogen and oxygen to make electricity, leaving only air and water as by-products.

Note: A full-colour version of this handout is available at the Manitoba Education, Citizenship and Youth website at:
www.edu.gov.mb.ca/ks4/cur/diversity/eal/





Topic 7A Space Travel

(1–2 lessons)

This lesson introduces students to vocabulary related to space and focuses on explaining concepts, both orally and in writing. Students practise reading and writing analogies, take notes and summarize technical readings, and write a short explanation. The lesson prepares them for the final project of the module.

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.5 Examine and interpret various visual media...

SLO 1.7 Evaluate a given text...

SLO 2.3.2 Demonstrate increasing awareness of... rhetorical forms...

SLO 6.2.7 Use elaboration...

SLO 6.2.9 Use summarization...

Instructional and Learning Sequence

Sequence 1

Activation

- a) Show a short segment of a video about space travel. How do the humans travel? Do you think this will be possible some day? What is the difference between space and atmospheric travel?
- b) Ask for volunteers to describe how a rocket works (this will be difficult).
 - Define "concept"—an idea, theory, principle, belief, something abstract. How can you explain concepts?

Language Features

Vocabulary

Words related to space: advent, asteroid, astronaut, biodome, boost, constellation, crew, debris, drift, exert, friction, galaxy, gravity, hazardous, launch, meteorite, momentum, navigate, orbit, parabola, payload, planet, probe, propulsion, radiation, remote, rendezvous, robot, satellite, solar, spinoff, thrust, trajectory, ultra, underway, velocity, viable, weightlessness

From AWL: alternative, analogy, attain, attainable, components, concept, convert, enable, eventual, facility, fund, innovation, precedent, structure, transfer, unattainable, unprecedented

Structures

compound adjectives

Academic Language Function

describing: steps in process (rocket launch)

Student Learning Tasks

- a) View the video, and answer the teacher's questions. (C)
- b) Describe how a rocket works. (C)

Teacher Notes and References

Video of any popular movie or television program based on space travel, preferably a clip showing some method of transportation (teacher-provided).

Internet Resources: "How Rocket Engines Work" at:

<<http://science.howstuffworks.com/rocket1.htm>>, or find a short reading that uses analogies to explain the basics of rockets

"Liftoff to Learning Mathematics of Space-Rendezvous" at: <http://vesuvius.jsc.nasa.gov/er/seh/Mathematics_of_Space.pdf>.

This accompanies a video, but contains useful information for talking about mathematics related to space travel.

"Basics of Space Flight" from the Jet Propulsion Laboratory, California Institute of Technology, at: <www.jpl.nasa.gov/basics/>

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.3.2 Demonstrate increasing awareness of... rhetorical forms...

SLO 6.1.5 Use selective attention...

SLO 6.2.2 Use repetition to imitate a language model...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 4.1 Use language to encourage...

SLO 6.2.7 Use elaboration...

SLO 6.2.9 Use summarization...

SLO 6.3.1 Use questioning for clarification...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

- c) Have students read independently **Handout 3-27: "How Do Rockets Work?"** and find the analogies.
- d) Practise making analogies:
 1. Give the students a common event or process (e.g., a traffic jam, selling something, building a bridge across a river) and have them think of some more complex things it could help explain (blood pressure, a job interview).
 2. Give two lists: Column A contains familiar concepts or processes, and Column B contains more complex ideas. Students choose an item from Column A to help explain any item in column B. See Language Features below.

There is no one answer—the goal is to think and explain the similarity. In this step, students state the similarity explicitly (x is like y because...).

Language Features

Discourse Features

Markers of analogy: The x is like...; Like the x, y...; much the way...; x, much like y...

Writing Task

- a) Have students write a paragraph that explains one of the previous concepts, using an analogy.
- b) Students read paragraphs to one another and have listeners question the explanation and ask for clarification and justification of the analogy.

Language Features

Structure

appositives

Discourse Features

organization of an explanation paragraph

Academic Language Functions

explaining
clarifying
restating
asking for details

Student Learning Tasks

- c) Read **Handout 3-27**: "How Do Rockets Work?" to find the analogies. (I)
- d) Practise making analogies. (I)

Assignment

- a) Write a paragraph that explains one of the previous concepts, using an analogy. (I)
- b) Read paragraphs to one another and have listeners question the explanation and ask for clarification and justification. (II)

Teacher Notes and References**Handout 3-27: "How Do Rockets Work?"**

Analogies: Analogies use simpler, more familiar ideas to explain unfamiliar or complex concepts. Note that the comparison implied in an analogy must be accurate and the relationship must be explained (note examples in reading).



At this point, students should avoid using "because" and let the analogy flow naturally. Note the importance of a clear topic sentence and conclusion, and the need for students to explain unfamiliar terms in their own words.

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 6.1.2 Use organizational planning...

SLO 6.2.2 Use repetition to imitate a language model...

SLO 6.2.4 Use note taking...

SLO 6.2.9 Use summarization...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.3.2 Use co-operation...

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.7 Evaluate a given text...

SLO 4.1 Use language to encourage...

SLO 6.3.2 Use co-operation...

SLO 6.2.7 Use elaboration...

Instructional and Learning Sequence**Advanced Readings**

Distribute the four readings on methods of propulsion among groups of students. Using the Jigsaw technique, students develop a summary of each of these possible means of space propulsion, noting any analogies that aid understanding. Students may formulate simple questions to guide the summary. Students regroup and share their findings. The class may discuss the feasibility of the ideas, based on foreseeable technology.

Language Features**Vocabulary**

expressions for description, clarification, interrupting, expressing opinions

Academic Language Functions

summarizing
expressing opinions

Discussion

Why do people want to go into space? Would you want to be an astronaut? Is the cost of space exploration justified by the benefits? Have you personally benefited from space travel?

Student Learning Tasks

Using the Jigsaw technique, meet in Expert Groups of four to read and summarize one of the handouts. Come up with a common summary. (■)

Meet in Home Groups to share summaries of all four articles. (■)

Participate in discussion. (■)

Teacher Notes and References

Handout 3-28: "Space Sails"

Handout 3-29: "Momentum Exchange Tether Propulsion"

Handout 3-30: "Ion Propulsion"

Handout 3-31: "Plasma Sails"



"Canadian Space Agency Educator Resources" at:

<www.space.gc.ca/asc/eng/youth_educators/educators/resources/all.asp>

"SEDS: Students for the Exploration and Development of Space," images, articles, statistics, short texts suitable for dictation, at: <www.seds.org/>

Outcomes

SLO 6.23 Use grouping of items to classify...

SLO 6.27 Use elaboration...

SLO 1.2 Respond to texts with increasing independence...

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.4 Show awareness of organizational patterns

SLO 6.2.6 Use substitution to select alternate approaches...

SLO 6.2.7 Use elaboration...

SLO 6.2.4 Use note taking...

SLO 6.2.9 Use summarization...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Sequence 2

Post on the board teacher-provided visuals of spinoff products or, alternately, a Word Splash page of such products. Ask students what the pictures or words have in common. Have the students or their family members ever used any of the items depicted? (See **Handout 3-32: "Spinoffs from the Space Program."**)

Alternative readings (teacher-provided). Search for websites that discuss spinoffs from space research.

Language Features

Structure

present perfect tense

Task

Students will use the headings to take notes and summarize with a partner. As a class, select the most revolutionary or most surprising spinoffs. Note that the language is highly technical and students should not try to understand every word, but rather use key vocabulary and reading strategies to understand the main ideas.

Language Features

Discourse Features

note form

Academic Language Functions

rereading for main idea

summarizing

Further Discussion

1. What is Canada's role in space research?
2. Are the students' home countries involved in space research?
3. Do you think there is life on Mars? Ask students to back up their opinions with facts they have learned. What do they know about attempts to explore Mars?

Language Features

Discourse Features

debate format

Academic Language Functions

analyzing and interpreting data

hypothesizing

listening for information

Speaking

Debate whether human missions should be replaced by robotic ones.

Student Learning Tasks

- Discuss what the pictures or words have in common.
- Have you or your family members ever used any of the items depicted?

Look at **Handout 3-32**: "Spinoffs from the Space Program."

Discuss**Debate****Teacher Notes and References**

Visuals of spinoff products (teacher-provided), or write names of products on the board

Handout 3-32: "Spinoffs from the Space Program"

Internet Resources: "Surviving in a Closed Environment: Life Beyond Earth" at:
<www.space.gc.ca/asc/pdf/educator-ecosystem_edu.pdf>

This activity gives good background information and reading about how the earth is a closed ecosystem and what is necessary to maintain life. Students have the opportunity to analyze and interpret data, predict outcomes, and propose solutions to problems. This prepares students for Topic 7B.

"Liftoff to Learning Mathematics of Space-Rendezvous." This accompanies a video, but contains useful information for talking about mathematics related to space travel.
<http://vesuvius.jsc.nasa.gov/er/seh/Mathematics_of_Space.pdf>

"Canadian Space Agency Educator Resources" at:
<www.space.gc.ca/asc/eng/youth_educators/educators/resources/all.asp>

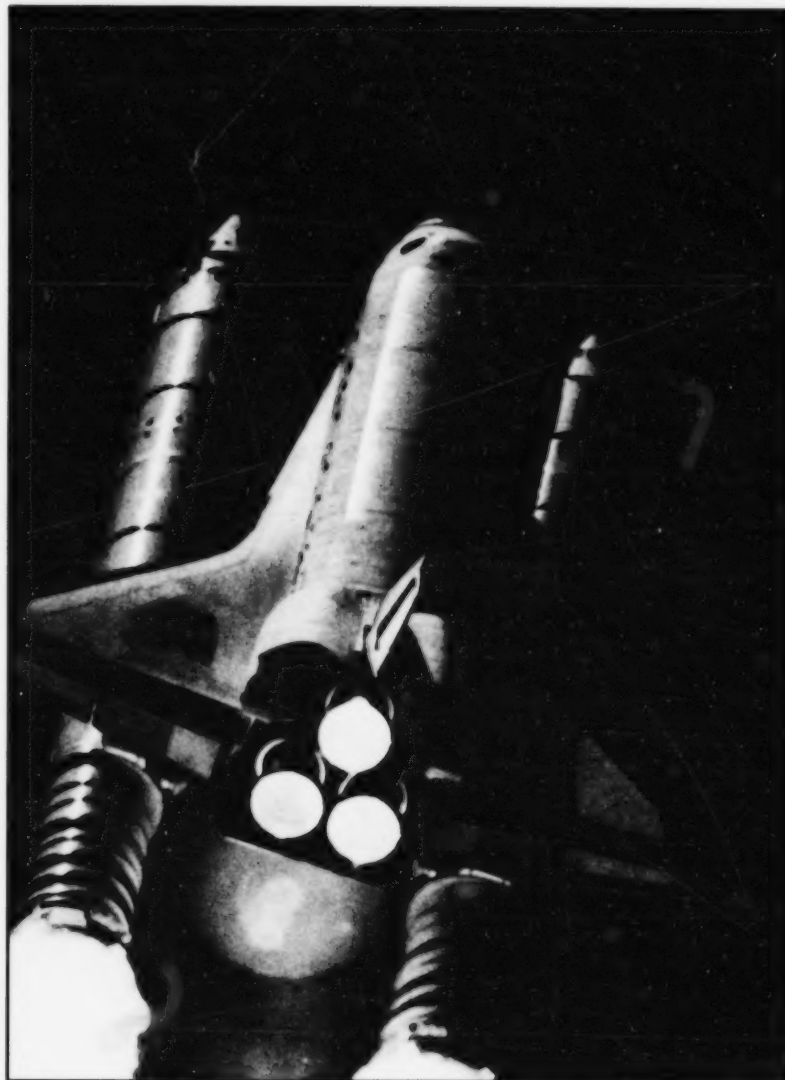
"SEDS: Students for the Exploration and Development of Space," images, articles, statistics, short texts suitable for dictation, at: <www.seds.org/>

"Basics of Space Flight" from the Jet Propulsion Laboratory, California Institute of Technology at: <www.jpl.nasa.gov/basics/>



How Do Rockets Work?

Rockets push stored materials in one direction and experience a thrust force in the opposite direction. They make use of the observation that whenever one object pushes on a second object, the second object exerts an equal but oppositely directed force back on the first object. This statement is the famous "action-reaction" concept that is generally known as Newton's Third Law. While it seems sensible that when you push on a wall it pushes back on you, this situation is extraordinarily general. For example, if you push a passing car forward, that car will still push backward on you with an equal but oppositely directed force. If you push on your neighbour, your neighbour will push back on you with an equal but oppositely directed force, even if your neighbour is asleep! In the case of a rocket, the rocket pushes burning fuel downward and the burning fuel pushes upward on the rocket with an equal but oppositely directed force. If the rocket pushes its fuel downward hard enough, the fuel will push up on the rocket hard enough to overcome the rocket's weight and accelerate it upward into the sky and beyond.



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Space Sails

Advanced Space Transportation
Technology Summary

Space Sails



Sailing in space could be one way to go to the stars. Researchers at NASA's Marshall Space Flight Center in Huntsville, Ala., are pursuing space sails as an advanced concept for interstellar travel.

Thin, reflective sails could be propelled through space by sunlight, microwave beams or laser beams—just as the wind pushes sailboats on Earth.

The concept of space sails is nothing new. About the same time Jamestown was being established as America's first permanent colony, German astronomer Johannes Kepler penned a letter to Italian astronomer Galileo, advocating "ship or sails adapted to the heavenly breezes" to travel to Jupiter or the Moon. Having observed that a comet's tail always faces away from the Sun, Kepler concluded light from the Sun exerts a force that pushes its tail away.

The rays of light emanating from the Sun provide tremendous momentum that could push a solar sail about 150,000 mph. Space sails could make interplanetary travel four to six times faster than today's propulsion systems. In addition to moving remarkably faster than traditional systems, solar sails require no fuel. The Sun supplies all the energy.

And while the notion of sailing in space has been around for centuries, it's only become a real possibility in the last few years—with the advent of strong, lightweight composite materials.

Sails in space would have a very large surface area—almost a half-mile wide—but could be thinner than cellophane. The density of a space sail is less than one-tenth ounce per square yard, the equivalent of flattening one raisin to the point that it covers a square yard. A solar sail might be composed of a carbon fiber material with a thin coating of reflective aluminum.

Another space sailing concept, dubbed mini-magnetospheric plasma propulsion, or M2P2, uses a huge magnetic bubble as a sail. The "sail" would be pushed along by charged particles of the solar wind, instead of rays of sunlight. The charged particles of the solar wind would interact with the magnetic field to push the magnetic bubble, or sail.

Sail propulsion will be used initially for robotic missions and eventually could be considered for human space travel. A space sail may power an interstellar precursor mission NASA hopes to launch in the next decade to explore the edge of our solar system and study its interaction with nearby interstellar space.

The Marshall Center is leading NASA's propulsion research for the unmanned probes that will venture billions of miles in space. Its engineers are conducting laboratory experiments as they begin to evaluate and characterize materials for space sails. Challenges include how to build, package and unfurl a solar sail and control its direction of travel through space. Since the sail would get very close to the Sun, thermal protection is also of major importance.

Marshall is partnering with NASA's Jet Propulsion Laboratory in Pasadena, California, and the University of Washington in Seattle to develop sail propulsion for interstellar precursor missions. The Marshall effort is managed by the Advanced Space Transportation Program, NASA's core technology program for all space transportation. The Advanced Space Transportation Program is pushing technologies that will dramatically increase the safety and reliability and reduce the cost of space transportation.

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Momentum Exchange Tether Propulsion

Advanced Space Transportation
Technology Summary

Momentum-Exchange Tether Propulsion



NASA's Marshall Space Flight Center in Huntsville, Ala., is developing experiments to show that tether-based propulsion – which requires no on-board propellant but instead draws power from the near-Earth environment – could dramatically reduce the cost of raising and maintaining the orbits of other spacecraft, including communications satellites and probes destined for the outer planets of our solar system.

Using the scientific principle of "momentum exchange" – the action of transferring momentum from one body to another – tether propulsion systems provide a viable alternative to traditional chemical propulsion systems, enabling a variety of missions along the highway to space.

By briefly linking a slow-moving object with a faster one, the slower object's speed may be dramatically increased as some of its counterpart's momentum is transferred to it – much the way ice skaters play "crack the whip" to launch one another at high speed across the ice. Similarly, a spinning, tether-based satellite in low Earth orbit might snare slower-moving objects and hurl them at increased speed toward higher orbits.

Researchers at the Marshall Center are developing the "Momentum Exchange, Electrodynamic Reboost" tether propulsion system, or MXER, which would use momentum exchange to transfer satellites from low-Earth orbit to geosynchronous orbit – a fixed orbit roughly 22,300 miles (36,000 kilometers) above the equator – and beyond. MXER also would employ electrodynamic reboost to maintain its own elliptical orbit: an oblong circuit that would bring MXER to within 248 miles (400 kilometers) of Earth at perigee, or its nearest point, and shoot out to more than 4,970 miles (8,000 kilometers) at apogee, or its farthest point.

Intended for launch by rocket to a circular low-Earth orbit, MXER would deploy a 93-mile-long (150 kilometers) tether that uses a combination of electrical current and gravity to put the tether into a tight spin, altering its orbit into an elliptical pattern. As communications satellites and other high-orbit payloads are launched by rocket into low-Earth orbit, they could rendezvous with MXER, which would "snare" them via a net-like catch mechanism and hurl them toward their final destination – without the need for the costly, fuel-heavy upper-stage booster rocket usually associated with the climb to geosynchronous orbit.

And because MXER would remain in orbit, repeating its orbital transfer duties throughout its lifespan, it could greatly reduce costs associated with upper-stage rockets, which normally fall back into the atmosphere and burn up after a single use.

A tether-based propulsion system such as MXER could be flying in 10-15 years, raising or lowering satellites or deep-space probes for scientific and engineering purposes, and boosting commercial satellites to geosynchronous orbit. Some forward thinkers among NASA's industry partners are already developing ways to use the technology to cheaply and efficiently transport payloads beyond low-Earth orbit – paving the way for an eventual human return to the Moon, as well as journeys to Mars and the outer planets.

NASA's MXER technology development team includes the University of Illinois at Urbana-Champaign, Tennessee Technological University in Cookeville, and Tethers Unlimited of Lynnwood, Wash.

The MXER experiment is managed by the Marshall Center's Advanced Space Transportation Program, which is paving the highway to space by developing innovative technologies to dramatically reduce the cost of space transportation.

For more information about space tethers and their potential applications, visit
<http://www.tethers.com>

For more information about NASA Space Transportation Systems, visit
<http://www.space transportation.com>

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Ion Propulsion

Advanced Space Transportation
Technology Summary

Ion Propulsion

Ion propulsion – a futuristic technology that for decades catapulted spacecraft through the pages of science fiction novels – is now a reality. An ion engine, developed by NASA and measuring just 12 inches (30 centimeters) in diameter, is the main propulsion source for Deep Space 1, a 20th Century spacecraft now completing its primary mission: to validate technologies for 21st century spacecraft.

An ion propulsion system converts spacecraft power into the kinetic energy of an ionized gas jet. As the ionized gas exits the spacecraft, it propels the craft in the opposite direction. An ion engine is fueled by xenon, a colorless, odorless, tasteless and chemically inert gas. The xenon fuel fills a chamber ringed with magnets. When the ion engine is running, electrons emitted from a cathode strike xenon atoms, knocking away an electron orbiting each atom's nucleus and turning it into an ion.

The spacecraft contains a pair of electrically charged metal grids. The force of the electric field generated by the grids exerts a strong, electrostatic pull on the xenon ions, much the way bits of lint are pulled to a pocket comb that has been given a static electric charge by rubbing it on wool. The xenon ions shoot past the grids at speeds of more than 88,000 miles (146,000 kilometers) per hour, continuing out the back of the engine and into space. These exiting ions produce the thrust that propels the spacecraft.

Ion propulsion is 10 times more fuel efficient than on-board chemical propulsion systems. This greater efficiency means less propellant is needed for a mission. In turn, the spacecraft can be smaller and lighter, and launch costs lower.

Deep Space 1 carries 178 pounds (81 kilograms) of xenon propellant, capable of fueling engine operation at one-half throttle for more than 20 months. Ion propulsion will increase the craft's speed by 7,900 miles (12,700 kilometers) per hour over the course of the mission.

NASA has studied ion engines since the 1950s. Dr. Harold Kaufman, a technologist at NASA's Glenn Research Center (formerly Lewis Research Center) in Cleveland, Ohio, designed and built the first broad-beam electron-bombardment ion engine in 1959, using mercury as fuel. Suborbital ion engine tests were underway by the early 1960s.

In the early 1990s, NASA identified improved electric propulsion as an enabling technology for future deep space missions. Glenn Research Center and the Jet Propulsion Laboratory in Pasadena, Calif., partnered on the NASA Solar Electric Power Technology Application Readiness project, or NSTAR. Its purpose: to develop a xenon-fueled ion propulsion system for deep space missions.

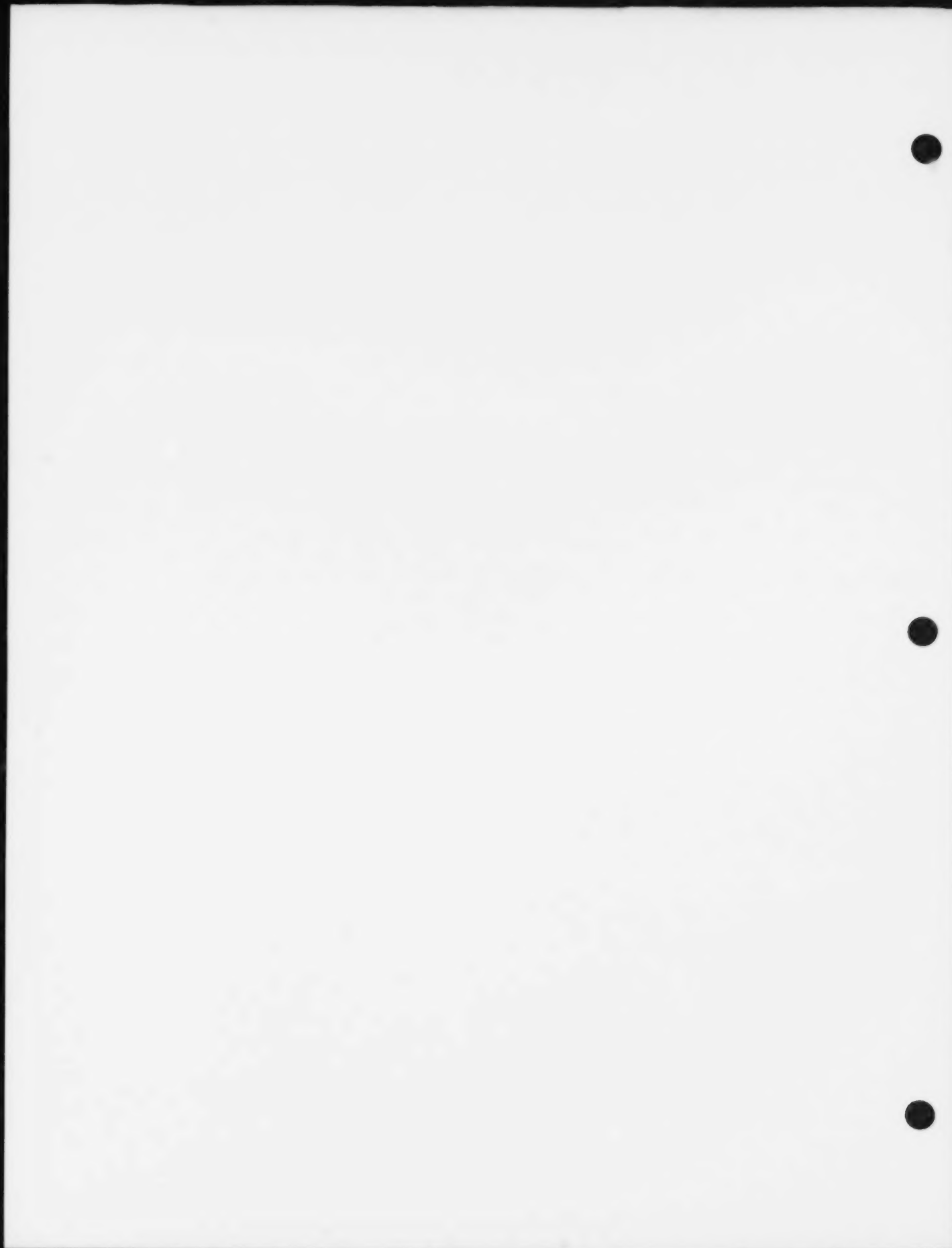
Ion engines with extended performance and higher-power, NSTAR-type engines – in the 10-kilowatt and 0.08 pound-thrust range – are candidates for propelling future spacecraft to visit Pluto, the moons of Jupiter and other large bodies in the outer solar system. Low-power (100 to 500 watts) systems also could be used to deliver miniaturized robot spacecraft to visit and study comets, asteroids and other smaller bodies. Laboratory tests to develop high- and low-power, light-weight ion propulsion system components and subsystems are now underway.

For more information about the Deep Space 1 mission, visit
<http://nmp.jpl.nasa.gov/ds1/>

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Plasma Sails

Advanced Space Transportation
Technology Summary

Plasma Sails



NASA researchers and their partners in industry and academia are pursuing plasma sail technologies as a potential future source of in-space propulsion — one that could enable a new era of scientific discovery throughout the solar system.

Plasma sail research is being conducted under the leadership of NASA's In-Space Propulsion Program, managed by the Office of Space Science in Washington, D.C. The program is implemented by NASA's Marshall Space Flight Center in Huntsville, Ala.

The concept of the plasma sail stems from NASA's goal of using natural energy sources found in the environment of space — rather than heavy and costly chemical fuels — to provide alternative means of propulsion for future interplanetary craft. Space-based sail technologies seek to harness the "solar winds," billions of tiny, electrically charged particles constantly jettisoned away from the Sun by the force of its powerful, overlapping magnetic fields. These particles travel through the solar system at top speeds of more than a million miles per hour.

Researchers say an innovative plasma sail craft could be carried on this constant, inexhaustible flow like a hot air balloon in a strong wind stream, reaching flight speeds previously unattainable by chemical propulsion.

Such an idea was first proposed by science fiction writer Carl Wiley in 1951, and advanced as a scientific possibility by physicist Richard Garwin later that decade. But it wasn't until the mid-1990s that practical research into harnessing plasma — or the super-energized gas that would serve as the foundation of such a unique propulsion system — were undertaken.

Now, NASA and its partners are developing an innovative, nearly weightless plasma-drive system that would inflate like a hot-air balloon to surround the entire vehicle, mimicking a natural magnetosphere — the bubble of magnetic power surrounding Earth and other planets — and allowing plasma particles to be converted to a source of propulsion.

Such a craft could, over a period of months, reach maximum flight speeds in excess of 100,000 mph. Compare its speed with that of Voyager 2, the deep space probe launched to the outer planets and beyond in 1977, and powered by a conventional chemical propulsion system. Voyager 2 now travels away from our solar system at roughly 795,000 miles per day. There is enough power in the solar winds to accelerate a 300-pound plasma-drive craft to speeds of up to 180,000 mph — or 4.3 million miles a day.

Using this technology, NASA hopes to increase the number and value of future planetary missions. Their ultimate goals: to send routine probes and survey craft to neighboring planets and their satellites in a fraction of the time; to increase payload sizes, duration of research, and communication between craft and researchers on Earth; and to lower overall mission costs.

Early research into innovative plasma-sail concepts was funded by the NASA Institute for Advanced Concepts (NIAC) in Atlanta, Ga.

NASA expects to award computational and experimental research activities for new and existing plasma sail concepts in 2003.

For more information about NASA's In-Space Propulsion Program and plasma sails research, visit:
<http://www.spacetransportation.com>
<http://www.msfc.nasa.gov/news>

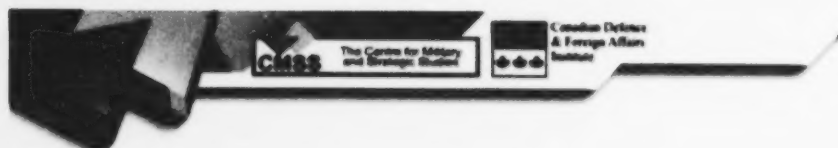
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Spinoffs from the Space Program



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Technological growth is a key to the increasing prosperity of society. Innovations in technology reduce the amount of resources (inputs), such as instance time or money, required to achieve a particular goal (output). For example, through technological innovations, computers are now many times more powerful yet cheaper to build.

How does technological innovation happen? A famous saying is that "necessity is the mother of invention"; this saying is catchy, but partly wrong. Dire need alone does not induce discoveries or inventions (otherwise we certainly would already have cures for AIDS and cancer). Rather, technological innovation is caused by a number of factors, including research and development, a strong education system, places where people can lend and borrow capital, and institutions for sharing information. But for many of society's most important innovations, chance or good luck had as much to do with their development as any other factor. Therefore, trial and error is also very important to the process of innovation.

Many innovations originally developed for one purpose are later applied for an entirely different purpose. The entirely new and originally unintended application of a technology is called a "spinoff." In some cases, the spinoff applications of technology are even more effective or successful than the original application. In the case of space and defence technology, technological spinoffs are extremely common and have led to a wide range of very important innovations, including the Internet, the Laser, Satellite Communications and Navigation, Virtual Reality, and the Artificial Heart.

Some examples of space technology spinoffs include:

(continued)

Spinoffs from the Space Program (continued)

- **CAT Scanners and MRI technology**

CAT Scanners and MRI technology (Computer-Aided Tomography and Magnetic Resonance Imaging) came from technology developed to computer-enhance pictures of the moon for the Apollo program. The CAT scanner searches the human body for tumours or other abnormalities and is used in hospitals worldwide.

- **Artificial Heart**

The technology used in Space Shuttle fuel pumps led to the development of a miniaturized ventricular assist pump (artificial heart).

- **Computer Reader for the Blind**

Optacon is a spinoff technology that enables the blind and deaf-blind to read anything in print. A user passes the Optacon mini-camera over a printed page with his or her left hand. A control unit processes the camera's picture and translates it into a vibrating image of the words the camera is viewing, which the user senses the tactile image with his other hand. Optacon II is a newer version that provides access to both printed words and the electronic information available on most personal computers.

- **De-mining device**

The same rocket fuel that helps launch the Space Shuttle is now used to save lives by destroying land mines. A flare device, using leftover fuel donated by NASA, is placed next to the uncovered land mine and is ignited from a safe distance using a battery-triggered electric match. The explosive burns away, disabling the mine and rendering it harmless.

- **Water Filter/Conditioner**

Water filters and conditioners came from technology developed to purify water on the space shuttle.

- **Laser Technology**

Lasers emit a narrow and very intense beam of light or other radiation and are used to transmit communications signals; to drill, cut, or melt hard materials; and in medical applications. All lasers are spinoffs of a concept developed at NASA's Jet Propulsion Laboratory (JPL) for optical communications over interplanetary distances.

- **Solar Energy**

Solar energy is a useful alternative and environmentally friendly energy source. When sunlight strikes certain materials, such as silicon, electrons are set in motion that can be drawn off as electricity. This basic principle of

(continued)

Spinoffs from the Space Program (continued)

Solar energy is a useful alternative and environmentally friendly energy source. When sunlight strikes certain materials, such as silicon, electrons are set in motion that can be drawn off as electricity. This basic principle of photovoltaic conversion (PV) is used to provide power to nearly all man-made satellites. Although PV power is still too expensive for widespread use on Earth, it has proven a viable alternative energy source in areas where no conventional source exists, such as remote weather stations, sea-based navigational buoys, forest stations, and third world villages.

- **Cordless Products**

One of the most successful commercial spinoffs of space-based technology is a line of cordless products dating back to the Apollo era. One of the Apollo astronauts' tasks was gathering rock and soil samples from the moon's surface and required a lightweight and compact drill with its own power source. Black & Decker Corporation developed a successful battery-powered, permanent-magnet motor device. Then they refined this technology into a line of consumer and professional cordless tools and appliances such as the Dustbuster handheld vacuum cleaner.

- **Scratch-Resistant Sunglass Coating**

Scratch-resistant lenses came from technology originally intended to protect the plastic surfaces of aerospace equipment in harsh environments.

- **Virtual Reality**

Virtual reality combines three-dimensional graphics and sound to create highly realistic simulations. In the mid-1980s, NASA developed one of the first practical VR systems. The Virtual Interface Environment Workstation (VIEW) was a head-mounted stereoscopic display that allowed the operator to virtually "step into" a scene and interact with it. Virtual reality permits three-dimensional scientific visualization, for example to enable medical students to operate on virtual patients in a simulated hospital. The technology has huge potential in entertainment and education.

- **Portable Laptop Computer**

In November 1983, NASA flew a space shuttle mission that marked the space debut of a remarkable high-performance navigation monitoring computer dubbed SPOC, for Shuttle Portable Onboard Computer. The SPOC was the first true portable laptop computer.

- **Fabric Structures**

During the Apollo program, NASA sought to improve upon the fabrics it used in space and began its search for a durable, noncombustible material that

(continued)

Spinoffs from the Space Program (continued)

was also thin, lightweight, and flexible. Owens-Corning developed a glass fiber yarn that can be woven into a fabric and then coated with Teflon for added strength, durability, and the ability to repel moisture. The material met NASA specifications and was used in space suits throughout the Apollo era.

The technology in this material spun-off into the construction field, where a heavier version of the fabric is used as a permanent covering for sports stadiums such as B.C. Place in Vancouver and the Olympic Stadium in Rome. The air-supported stadium at B.C. Place, Vancouver, British Columbia, was Canada's first covered stadium. It seats up to 60,000 and has a ten-acre fabric roof that weighs only 1/30th as much as a conventional roof of that size. Sixteen giant fans blow air into the balloon-like envelope between the roof's outer membrane and its inner liner maintaining the pressure differential necessary for roof rigidity. The roof is made of space-based fabric that reduces lighting needs, cooling costs, and maintenance costs by increasing the fabric's resistance to moisture, temperature extremes, and deterioration. Kilogram per kilogram, the material is stronger than steel and weighs less than 1.53 kilograms per square metre.

• The future technology

Research into space technology continues, bringing concepts that previously belonged only to science fiction into reality. One area of space research with great potential is into new propulsion systems. The goals in developing new spacecraft propulsion systems are to make space travel easier, faster, and less expensive. A lot of this research is into propulsion systems using antimatter, chemical, nuclear, laser, magnetic, or microwave technology. By developing more powerful and less costly ways to propel spacecraft, space travel will become more commonplace and further reaching. When this happens, the possibilities for colonization of other planets opens up as well.

Case Study: Satellites

Research and development for space and aerospace defence created a number of satellite technologies that resulted in very successful spinoffs. Most of these can be described in four broad categories: atmospheric and weather monitoring satellites, communications satellites, satellite navigation, and environmental monitoring and remote sensing satellites.

Atmospheric and weather monitoring satellites and the Alouette-I

Atmospheric and weather satellites collect information for scientists and meteorologists on the different parts of the earth's atmosphere. Atmospheric satellites are generally focused on the outer regions of the earth's atmosphere, particularly the gases and particles that make-up the different layers of the atmosphere. Atmospheric monitoring satellites investigate issues such as the depletion of the ozone layer and the effects of solar radiation on other satellites. Weather monitoring satellites focus on the lower regions of the atmosphere, where clouds condense and weather is formed. These satellites give meteorologists an indication of weather patterns and storm activity, including the tracking of hurricanes and typhoons.

(continued)

Spinoffs from the Space Program (continued)

The Alouette-I atmospheric satellite was Canada's entry into the space age when it was launched on September 29, 1962. The Alouette launch made Canada the first nation, after the Russian and American superpowers, to design and build its own artificial earth satellite. Launched into orbit by an American Thor-Agena rocket, the scientific purpose of Alouette-I was to study the earth's ionosphere (a charged layer of the atmosphere) from above. The Alouette-I was only designed to operate for only one year, but stretched out a 10-year mission that produced over one million images of the ionosphere. Alouette-I gave Canadian scientists information about the aurora borealis (the northern lights). The aurora borealis result when electrically charged particles from the sun cause gas atoms in the earth's ionosphere to release light. These same interactions in the ionosphere that create brilliant lights in the northern skies at night also disturb radio communications. As a result of the success of Alouette-I, Canada and the US launched further ionosphere observation satellites, including Alouette-II, ISIS I, and ISIS II.

Weather satellites provide real-time cloud photographs. In addition to the coverage of weather over land, weather satellites are extremely valuable because of the information they provide about weather over water, where few surface observations can be made. Before the deployment of weather satellites, many areas had no advance warning of impending severe storms. Today satellites can spot and accurately track hurricanes and typhoons while they are still far out in the ocean.

Two types of weather satellites exist, depending on what type of earth orbit they use. Geostationary (or geosynchronous) satellites orbit at a distance of 36,000 kilometres above a fixed point on earth. By doing so, these satellites are able to focus on a particular area of the earth, for example the Canadian west. Polar orbiting satellites travel over the North and South poles in a path that closely parallels the earth's meridian (North-South) lines. These satellites travel around the earth at a distance of 850 kilometres, much lower than geostationary satellites. By doing so, polar orbiting satellites give a much more detailed picture of cloud systems and violent storms.

Communications Satellites and the Anik I

Since the beginning of the satellite communications industry in the early 1970s, Canada has been a world leader in satellite communications. On November 9, 1972, Canada launched Anik A1 and became the first country in the world with a domestic communications satellite. Anik (which means "brother" in the language of the Inuit) made it possible to connect all regions of Canada, the world's second largest country. The launch also made Canada pioneers in the first, and now largest, commercial space sector: satellite communications. After Canada began domestic satellite service in 1972, it was joined by the United States (1974), Indonesia (1976), Japan (1978), India (1982), Australia and Brazil (1985) and others.

In 1973, the Canadian Broadcasting Company (CBC) began transmitting radio and television programs from coast to coast and into the North. The launch of more communications satellites in the late 1970s created the industry for satellite television, where people who purchased satellite dishes could receive hundreds and later thousands of television channels. Since 1980, the Toronto based Globe and Mail newspaper has used Anik satellites to transmit images of its pages from Toronto to other cities across Canada. The result is that the newspaper can be printed in cities such as Calgary at almost the

(continued)

Spinoffs from the Space Program (continued)

same time as Toronto. On January 3, 1996, Canada and the US launched the Mobile Satellite (MSAT). MSAT bounces powerful signals to small and portable antennae, like those found in cellular phones.

Since the launch of Anik A1, at least a dozen more Canadian commercial satellites have been sent into orbit, including five that are currently operational. The most recent of these, the Anik F1, was launched on November 21, 2000 as the most powerful communications satellite in the world. As a result of the Canadian investment in satellite communications, Canada is now one of the most connected nations in the world.

Satellite Navigation and GPS

Another use of satellite technology is to provide information about the precise location, speed, and time for a particular receiver. Global Positioning System (GPS) technology was originally developed by the US Department of Defense (DoD) for military purposes, but has now become incredibly popular for civilian applications. Imagine any activity where knowing your precise location or precise time is important and chances are you will have an example where GPS is useful. In the military, GPS is useful for many things, including allowing troops, pilots, or sailors to locate their positions, or in the accurate targeting of weapons. In particular, the military advantages of GPS were demonstrated in the Gulf War – so much so that since 2000 all US weapons platforms are required to have GPS integrated into them. Today, more civilians use GPS than military personnel. These people include commercial pilots and air traffic controllers, construction workers, farmers and fishermen, filmmakers, surveyors and cartographers, and outdoor recreational seekers.

GPS works by referencing the position of a receiver relative to satellite transmitters. The satellite transmitters emit radio signals at the speed of light (299,274 kilometres per second). Based on the amount of time it takes for the signal to travel from the satellite to the receiver, one can figure out how far apart they are (because speed multiplied by time equals distance). By receiving this information from four GPS satellites at once, the three dimensional position and time of the receiver can be established. In reality, the calculations are much more complex, because the radio signals used to measure the distance will bend and deflect off certain things, including parts of the atmosphere, rock formations, or buildings.

The entire GPS Operational Constellation consists of 24 satellites that orbit the earth every 12 hours. Each satellite is roughly 20,200 km from earth travelling at speeds of about 11,800 km/h. The Master Control facility for GPS is located at Schriever Air Force Base in Colorado. By using ground based radars such as the one at Schriever, the US DoD keeps track of exactly how far each satellite is from the earth, since slight changes in the orbit of the satellite will affect calculations and must be adjusted for.

The concept of GPS was developed in the 1960s. Earth testing in the 1970s culminated with the first GPS satellite launch in 1978. Originally only available for the military, the US government made GPS commercially available in the mid-1980s. GPS provides its signals as coded information that, until 2000, was delivered in two levels of service. Prior to 2000, the most precise signals (P-code) were reserved for the US military. Today all GPS signals are available free of charge to the commercial public, giving people with a receiver the ability to locate their position within about 15 metres. Newer "Differential GPS" technology can pinpoint locations to inside a few metres, because it incorporates ground-based receivers to correct errors and improve accuracy. As technology continues to advance and

(continued)

Spinoffs from the Space Program (continued)

GPS precision increases, more applications become possible. In the future, GPS will likely be able to pinpoint locations down to the centimetre. This type of accuracy may enable self-guided cars to drive themselves or pilots to land in zero visibility.

Environmental monitoring satellites, remote sensing, and RADARSAT

Remote sensing is the process of using satellites to collect information about the land from high above the Earth. Remote sensing allows both land mapping and observation. The U.S. put LANDSAT, the world's first remote-sensing satellite, into orbit in 1972. Outside the US, Canada became the first country in the world to use LANDSAT. Canada uses LANDSAT for many things, including helping to manage its forests and crops, look for minerals, and make very accurate maps.

In November 1995, Canada launched its own remote-sensing satellite, RADARSAT, to monitor environmental change and the planet's natural resources. RADARSAT uses radar instead of light to form pictures of the earth and thus can produce accurate pictures at night and on cloudy days. Specifically, RADARSAT uses a microwave instrument that sends pulsed signals to Earth from its orbiting altitude of 798 kilometres and processes the received reflected pulses. The data from RADARSAT is received at the ground stations operated by the Canada Centres for Remote Sensing in Prince Albert, Saskatchewan and Gatineau, Quebec.

RADARSAT performs a number of features related to environmental monitoring. The satellite monitors ice conditions in the Arctic and disasters such as oil spills, floods, and earthquakes. RADARSAT also maps structural features of the Earth, such as fault lines, and thus provides clues to the distribution of ground water, mineral deposits, and oil and gas in the Earth's crust. Information provided by remote-sensing satellites such as RADARSAT improves the ability to manage major natural resource industries such as mining, fishing, farming, and forestry. As the need for understanding the environment becomes increasingly important, the work remote-sensing satellites do also becomes more important. A second RADARSAT satellite is scheduled for launch in late 2003.

Case Study: The Internet

The idea behind the modern Internet was born from a Cold War era problem: in the event of a nuclear war, how could US authorities successfully communicate? A command-and-control network was needed that would link people at military bases and in various cities around the US. The problem was that any central authority and wiring used to connect the different sites was vulnerable to attack; no amount of armour could protect such things. The American defence industry think-tank RAND puzzled over this problem and made the following conclusions in 1964: the network must have no central authority and must be designed to operate even while certain parts were destroyed or disabled.

To overcome this dilemma, the designers assumed the network was vulnerable at all times and that no particular part was perfectly reliable. Each node in the network was made equally important (or rather, equally unimportant). Each node retained the ability to originate, pass, and receive messages. Messages were passed in packets; the direction that the packets took through the system was unimportant, only that they reached their final destination. If a big piece of the network were destroyed, the packet en route through

(continued)

Spinoffs from the Space Program (continued)

that part would just traverse other parts of the network until it found a route that worked. Although this "packet-switching" system wasn't as efficient a way for information to travel, it was very durable.

Beginning in the mid and late 1960s, scientists at RAND, MIT (Massachusetts Institute of Technology), UCLA (University of California Los Angeles), the Pentagon, and Great Britain's National Physical Laboratory tested ideas for the network. In 1969 the first node (a supercomputer) was set up at UCLA. By the end of that year, four nodes existed on the infant network. Because the US Department of Defense's Advanced Research Project Agency (ARPA) led the creation of the network, it was named ARPANET.

The computers on ARPANET shared information on high-speed transmission lines and programmers could work on each computer remotely from another on the network. The supercomputer nodes continued to expand throughout the 1970s because unlike standard computer networks, the ARPANET could accommodate many different kinds of machines. Also, since connecting to the Internet cost little or nothing, the network was easy to join.

By only the second year of ARPANET's operation, the people using the network were using it to trade notes, news, and personal messages (including gossip) rather than long distance computing. Users had their own personal addresses for electronic mail and soon mailing lists were born, where identical messages were broadcasted to a large number of subscribers.

The birth of the Internet as we know it today happened with the introduction of Transmission Control Protocol/Internet Protocol (TCP/IP) software. TCP/IP is the 'language' by which data is communicated across the Internet. It surpassed the ARPANET's original communication tool, Network Control Protocol (NCP), in the late 1970s and early 1980s. TCP converts messages into streams of 'packets' at the source computer and reassembles them at the destination computer. IP handles the addressing of the packets and makes sure the packets are routed across several nodes and networks. Together, TCP/IP software is responsible for taking data from one computer and connecting it to another via multiple nodes.

The rapidly expanding network was growing at an amazing rate. First called the "Internet" in 1982, by 1984 it had more than 1,000 hosts. By 1987, more than 10,000 hosts had sprung up. The military part of the network separated to become MILNET in 1983. ARPANET itself formally expired in 1989/90 as a victim of its own overwhelming success, leaving behind a network of networks involving more than 300,000 hosts. By this time, the four main functions of the Internet were email, discussion groups, long-distance computing, and file transfers.

Success brought problems for the Internet, specifically with regard to privacy and security of the hosts on the network. In 1988, when the terms 'hacker' and 'electronic break-in' were being used for the first time, a malicious program called the "Internet Worm" temporarily disabled 6,000 of the 60,000 hosts on the Internet.

In 1991 four huge events changed the shape of the Internet. Prior to 1991, commercial traffic on the Internet was banned by the National Science Foundation's NSFNET, the backbone of the Internet. When this restriction was lifted in 1991, the age of online commerce began. Also in 1991, a programming team at the University of Minnesota led by Mark MacCahill, released "gopher," the first point-and-click way of navigating the Internet. Gopher was freely distributed and MacCahill called it "the first Internet application my Mom

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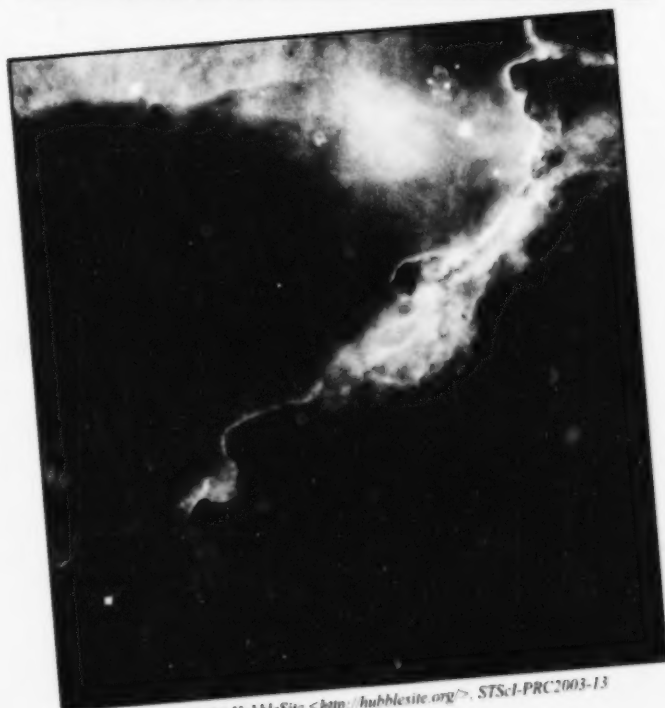
Spinoffs from the Space Program (continued)

can use." The third major event in 1991 occurred when Tim Berners-Lee posted the first computer code of the World Wide Web [add to glossary information on the difference between Web and Internet – see file on this in readings] in a newsgroup. This code allowed for the combination of words, pictures, and sounds onto web pages. A fourth major event occurred with the development of Mosaic, a graphical browser for the World Wide Web, by Marc Andreessen (who later founded Netscape) and a team of student programmers.

By the next year (1992), the Internet surpassed 1 million hosts and in 1993 expanded at an annual rate of 341,634%. The Government of Canada came online in 1995 (www.canada.gc.ca). By 1996 the number of hosts approached 10 million and more than 40 million people were connected to the Internet in over 150 countries. "E-commerce" had grown to over \$1 billion (US) per year.

Today, more than 30 years after its birth, the Internet has grown from a military strategic for communicating in a post-nuclear world to the "information superhighway," a technology that has dramatically impacted the way people live and work.





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Topic 7B At Home in Space

(2+ lessons)

Students work in teams to research and design a space colony. They present a written and oral proposal. This project requires one computer with Internet access for each team, and preferably a media projector. The scope and length of the topic may be adapted. Teachers do not need to be technical experts—students will be!

Outcomes

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.2 Use several visual techniques

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 1.5 Examine and interpret various visual media...

SLO 1.7 Evaluate a given text...

SLO 5.4 Show understanding of the effect of cultural background...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence**Sequence 1****Activation**

Discuss with the class the design of a large city that they know. What kinds of materials are common in the structures? What kinds of public facilities are available? (health, education, recreation, etc.) What are the main businesses and industries? How are the basic needs supplied? (power, food, water, waste management, transportation, etc.) What is the effect of the physical environment on the development of the city? (e.g., location, climate, soil, transportation)

Language Features**Vocabulary**

words related to urban life, space (as determined by the readings the students choose)

Academic Language Functions

clarification

Many people predict that, in the future, we will have cities in space—on orbiting stations or on the moon or Mars. As on Earth, the physical environment of these cities will partly determine their design. Provide visuals of artists' depictions of space colonies (see Teacher Notes and References).

Discuss how realistic these and other depictions of life in outer space (e.g., in movies) are. How do these images indicate what people thought about the future at the time they were produced?

Language Features**Academic Language Functions**

describing

evaluating

Journal: Each day during the team project that is discussed in the proceeding page, students should summarize in their journals what they did that day: decisions made, resources found/consulted, progress made, strategies used, problems encountered, group dynamics, and changes they need to make. At the conclusion, they should reflect on their own contribution to the overall group project. If they could change one thing next time, what would they do? What did they feel pleased about?

Student Learning Tasks

Discuss the design of a large city. (C)

Discuss how realistic are the depictions of life in outer space. (C)

As a journal entry, summarize what you did each day: decisions made, resources found/consulted, progress made, strategies used, problems encountered, group dynamics, and changes you need to make. (E)

Teacher Notes and References

Internet Resources: "Space Settlement Design Teacher's Resource Page" (NASA) at: www.nas.nasa.gov/Services/Education/SpaceSettlement/teacher/.

This site provides excellent links to background readings, mainstream lesson plans, activities, technical information, and images.



These concepts lend themselves to a cluster web or concept map. The main categories could be developed by pairs or triads of students, then joined together for a large map to be left on the wall during the project that follows.



Visuals of artists' depictions of space colonies from 20 or more years ago (teacher-provided).

Excellent images are available from the NASA Ames Research Center at www.nas.nasa.gov/Services/Education/SpaceSettlement/70sArt/art.html. These are best viewed with a media projector, but they can be viewed individually or printed.

OR

Show a video clip from an older and a more recent space movie or television show.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 2.4 Use the steps of the writing process...

SLO 3.1 Seek, organize, and synthesize information...

SLO 3.2 Develop and implement a plan for researching...

SLO 4.1 Use language to encourage...

SLO 4.2 Communicate effectively to work with others...

GLO 6 Students will know and use effectively metacognitive, cognitive, and social and affective learning strategies to enhance learning.

Instructional and Learning Sequence

Brainstorm the basic needs for a colony of humans to live and work in outer space. (See the Teacher Notes and References column.)

Divide the class into several teams and assign the space colony project. Each team will be required to research and prepare a written proposal for their "space city" to the governing body of their fictional country and/or deliver a short presentation to their class. The outline of the project is in the Student Learning Tasks column.

Language Features

Vocabulary

emphasize precision and variety of lexis (e.g., instead of people, use inhabitants, residents, occupants)

Structures

it-cleft (it is obvious/clear/apparent/unfortunate/because of..., etc. that...)

Discourse Features

proposal format (refer to "Technically Write" by Ron S. Bliq—see Bibliography), using the basic Summary—Background Facts—Outcome arrangement
the difference between formal and informal register
conversational gambits for group interaction

Student Learning Tasks

Brainstorm the basic needs for a colony of humans to live and work in outer space. (C)

Project Instructions:

- Divide students into three “aerospace companies” with teams of up to five students. Students may choose to design a lunar-based, Mars-based, or orbiting colony, for 10,000 residents.
- Each design team should elect a project manager; the other members will serve as the medical doctor, design engineer, industrial engineer, urban planner, space psychologist, business manager, or any other professional role that is applicable. Each professional is responsible for relevant topics; some topics may need more than one person’s input.
- To begin, each team should research the physical conditions of the base environment on the Internet or in books.
- Each team’s plan should include the following elements, explaining the effects, of any, of the physical conditions:
 - Name of colony and reason for establishment, and seven of the following:

■ building materials	■ general layout
■ jobs and skills needed	■ businesses and industries
■ transportation to and within the colony	■ scientific research
■ provision of necessities (air, light, food, shielding, etc.)	■ government
■ recreation facilities	■ one other element
■ services needed	■ If desired, a flag, song, sports teams, etc. can also be chosen.

Finally, all companies should estimate the cost to build the colony (in today’s currency).

Each team researches and prepares a written proposal for their city, including the points provided by the teacher to the governing body of their country, and/or a short presentation to the class. (B) (C)

Teacher Notes and References



Internet Resources (preferably demonstrate these with media projector): “Human Needs in Outer Space” at: <www.nas.nasa.gov/Services/Education/SpaceSettlement/designer/needs.html>

“Space Settlement” <www.nas.nasa.gov/Services/Education/SpaceSettlement/>

“Space Settlement Basics” at: <www.nas.nasa.gov/Services/Education/SpaceSettlement/Basics/wwwwh.html>

“Colony Design” at: <www.nas.nasa.gov/Services/Education/SpaceSettlement/designer/>

“The Problems of Space Travel” at: <www.hq.nasa.gov/office/pao/History/SP-4026/contents.html>

Training materials for an international space settlement design competition at: <<http://space.bsdi.com/p.train.html>>

Outcomes	Instructional and Learning Sequence
	Extension Activities for the Preceding Project • Have students create computer-aided designs, physical models, or drawings of their cities. • Show tourist brochures from several cities and let students prepare a tourist brochure for their city. They should include topics such as best restaurants, weather, tourist sites, historic sites, museums, and recreation. • Have students create a front page of <i>City News</i>, a daily newspaper that communicates current events in their space city. • Have students write "A Day in the Life of... (a scientist, teacher, doctor, business owner, etc.)" in their city. Extension Activities for Mathematics and Physics Consider the Lunar Olympics: What would the events look like if staged with lunar gravity? Lunar conversion table: • To convert Earth weights into Moon weights: multiply by $\frac{1}{6}$ or .17 • To convert Earth distances thrown/kicked into Moon distances thrown/kicked: multiply by 6 • To convert Earth height jumped into Moon height jumped: multiply by 6 Advanced Several of the resource websites provide formulae for various technical aspects that students may include in their projects. Have students research Newton's laws of motion, if necessary. Direct each team to design its own demonstration of Newton's First or Third Law and present it to the class. Tell students that the demonstration must be applicable to space travel. As an extension, have students examine the relationship between force, mass, and acceleration in Newton's Second Law, $F = ma$, by designing experiments to test one variable at a time.

Student Learning Tasks

- Create computer-aided designs, physical models, or drawings of your city. (B)
- Prepare a tourist brochure for your city. (B)
- Create a front page of *City News*, a daily newspaper about current events in your space city.
- Write "A Day in the Life of... (a scientist, teacher, doctor, business owner, etc.)" in the city. (I)

Consider the Lunar Olympics: What would the events look like if staged with lunar gravity? (C)

Design a demonstration of Newton's First or Third Law and present it to the class. (B) (C)

Teacher Notes and References

Other Internet Resources: Try a search engine with the terms "space + tourism."

Example of scientific paper format: "Space Elevators, Space Hotels and Space Tourism" at: <http://members.aol.com/Nathan2go/SPELEV.HTM>

Canadian Arrow-space entrepreneurs at: www.canadianarrow.com/index.htm

"How Space Elevators Will Work" at: <http://science.howstuffworks.com/space-elevator.htm>

"How Terraforming Mars Will Work" at: <http://science.howstuffworks.com/terraforming.htm>

"Terraforming Information" at: www.users.globalnet.co.uk/~mfogg/index.htm

"Technological Requirements for Terraforming Mars" at: www.users.globalnet.co.uk/~mfogg/zubrin.htm



Senior 4 ELA: EAL for Academic Success



Module 4

For Better or Worse: Issues in Health

This module uses lifestyle topics such as fitness, smoking, and sleep, along with current issues such as alternative medicines and genetic advances, to continue building language skills for note taking, interpreting statistics and graphics, following arguments, analyzing writers' attitudes, recognizing implications, drawing conclusions, making predictions, and reading critically. Students will write personal responses; research a topic, prepare an outline and present orally; write a summary from notes; design and describe an experiment and a photo essay; develop rubrics; and discuss the pros and cons of controversial issues. They may also write a brochure, proposal, survey, or critique. The final activity consists of a town hall forum on smoking.

Module 4

For Better or Worse: Issues in Health

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Assessment for Learning

Module 4: For Better or Worse: Issues in Health

Topic 1: Staying Fit: It's Not about Age; It's about Attitude

Assessment Target: GLO 1: Students' ability to engage with increasingly difficult oral and/or visual text

Assessment Task: Students watch video *Seniors Are Cool!* and take notes to answer focus questions. Students self-assess by comparing notes with other students, then share notes with class.

Topic 2: New, Improved? Human Genetic Issues

Assessment Target: GLO 4/5: Students' ability to experience, consider, respond to and critique different perspectives in academic texts and group discussions

Assessment Task: After viewing a science fiction film, students write a critique of the science of the film, based on current research on genetic manipulation. Check writing samples for evidence of accurate inferencing, ability to summarize, describe, analyze and interpret; also check for elements of a critical review.

Topic 3: Sleep and Our Bodies

Assessment Target: GLO 1/6: Students' ability to engage with progressively difficult texts, using various learning strategies, such as advance organization and selective attention, to aid comprehension

Assessment Task: Students draw information from several texts about sleep deprivation in order to complete a writing task. Answers to comprehension questions given for each text should indicate understanding.

Topic 4: When East Meets West: Alternative Medicines: Investigating Herbal Medicines

Assessment Target: GLO 2: Students' knowledge of and ability to use visual techniques (i.e., rubric format) to convey information and clarify relationships (i.e., evaluate work)

Assessment Task: Small groups of students create rubrics to evaluate the design of student experiments on the effectiveness of herbal remedies. Check writing samples for appropriate criteria, parallel construction, and use of specific rather than general lexis.

Topic 5A: Smoking and Statistics: What a Tale They Tell

Assessment Target: GLO 1/2: Students' ability to make meaning and communicate understanding of increasingly difficult visual and written texts

Assessment Task: Students draw on and interpret information from several charts in order to write a paragraph. Check writing sample for three main ideas, correct usage of five new vocabulary words, sentence variety, and proper paragraph format.

Topic 5B: Smoking and the Media

Assessment Target: GLO 2/6: Students' ability to produce a visual text to convey factual information and clarify specific relationships

Assessment Task: Based on information drawn from the last two topics, students create a visual essay about smoking. Using a rubric, check visual essay for effectiveness and appropriate variety of visuals chosen to express the relationship pattern selected.

Topic 5C: Smoking Prevention and Cessation

Assessment Target: GLO 3: Students' increasing ability to seek, organize, and synthesize information from multiple sources to form, support, or revise a position using the steps of the research process

Assessment Task: Students will prepare to play a specified role in a town hall forum about a proposed smoking ban, researching and using their notes to speak and write. As students prepare for their roles, check their point-form notes for relevant statistical information, evidence of paraphrase and/or direct quotation, and correct citation format.

Portfolio

Item	Description
16	Topic 3: Graphic depiction of survey data, accompanied by summary
17	Topic 4: Student-designed rubric
18	Topic 4: Instructions for experiment on herbal remedy
19	Topic 5B: Photo-essay; additional written essay accompanied by a copy of partner's photo-essay
20	Student-selected journal entry

Assessment of Learning

Item	Description
The assessment focus for Module 4 is to employ a variety of academic language functions to convey understanding of, analyze, interpret, relate, and synthesize information from a variety of increasingly challenging text types (i.e., statistics) from across the curriculum in written, visual, and oral forms.	
1	Vocabulary test on words, especially from the AWL, and expressions from this module
2	Topic 1 Assessment Target: GLO 2: Students' increasing control of grammatical structures and discourse features to summarize, compare, and contrast Assessment Task: Students write a short essay comparing the attitudes about health communicated in two videos. Check for use of point form in outline, comparison essay format, and discourse markers of comparison and contrast.
3	Topic 3 Assessment Target: GLO 2: Students' ability to use visual techniques to convey factual information drawn from texts and/or surveys and to clarify relationships through writing Assessment Task: Students conduct a survey on sleep habits, display their data graphically, and write a short summary of their findings. Check for effective choice of graphic display, clarity of summary, and use of modals and other hedging devices.
4	Topic 4 Assessment Target: GLO 2: Students' knowledge of North American rhetorical forms and increasing ability to produce a short subject-area text, using the structures and language features appropriate to the text type Assessment Task: Students write instructions for a herbal remedy experiment. Check for correct experiment format and verb tenses.
5	Topic 5A Assessment Target: GLO 1/2: Students' ability to make meaning from and communicate understanding of increasingly difficult visual and written texts Assessment Task: Students choose five response prompts from those given and, using information drawn from several charts, produce four- to five-sentence responses. Check writing for usage of five new vocabulary words and appropriate elaboration and synthesis of ideas.

Assessment of Learning (continued)

Item	Description
6	Topic 5B Assessment Target: GLO 1/2: Students' ability to interpret texts from across the curriculum, showing increasing control of grammatical structures and discourse features to accomplish academic language functions Assessment Task: Students will produce a written text that clearly communicates understanding of the content and organizational structure of their partner's visual text. Check writing sample for clear communication of the message conveyed in the visual essay, appropriate discourse markers to reflect the organizational pattern of the visual essay, and the usage of five new vocabulary words.
7	Culminating Project: Topic 5C The "Town Hall Forum: Smoking Ban," which occurs at the end of this module, is an important summative evaluation item for this module. Assessment Target: GLO 1/2/3/4/5: Students' ability to understand, develop, express, argue for, and evaluate a position, using information from multiple sources and appropriate linguistic structures and features in a respectful and intelligible way. Assessment Task: Students will each play a specified role in a town hall forum about a proposed smoking ban. Develop an assessment rubric as per the criteria provided on page 152. Hand the rubrics out to students and discuss them to make sure they understand how their performance will be evaluated.



Topic 1

Staying Fit: It's Not about Age; It's about Attitude

(1–1.5 lessons)

In this introductory lesson, students will watch and take notes on a CBC video clip about baby boomers, and a videotape about senior citizens. These two videos compare the attitudes and behaviour of people of different age groups concerning health. The main academic tasks are: giving information in detail, describing similarities and differences, using visual aids and graphic

organizers, summarizing, recognizing important points, taking notes, understanding intonation and voice emphasis, recognizing the speaker's attitude, listening critically, recognizing implications, selecting relevant points, stating opinion, evaluating, classifying, supporting an argument, revising, and proofreading.

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 4.1 Use language to encourage...

SLO 4.2 Communicate effectively to work with others...

SLO 4.3 Use clear and respectful language...

SLO 4.6 Respond to and critique a variety of individual perspectives...

SLO 5.4 Show understanding of the effect of cultural background...

SLO 6.2.7 Use elaboration...

Instructional and Learning Sequence

Sequence 1

Activation

Introduce the topic of this module: health and health care. Ask the students to form groups of four and discuss the following statements:

1. What do you think the state of health is in Canada and your country of origin?
2. Do you think young people are generally more fit and healthier than older people?
3. Are older or younger people more willing to make lifestyle changes to become healthier?
4. What are some of the factors that affect this decision?
5. What can people do to make a positive change?
6. How do people react to, and prepare for, health problems?
7. Is it better to have prescriptive or preventative reactions to health care?
8. Is a combination of the two of these solutions the best answer?
9. How do you think these attitudes compare/contrast with those of Canadians?

As a class, share and record these ideas.

Language Features

Structures

Comparative and superlative forms: more willing, healthier, better, worse

Phrasal verbs: react to, prepare for

Conditional expressions: if a person is ill, then...

Discourse Features

Expressions for discussion: to agree, disagree, explain, describe, compare, contrast, emphasize, etc.

Pronunciation

students should be monitoring their own pronunciation in terms of sounds, stress, linkage, and reduction

Academic Language Functions

summarizing, explaining, describing, comparing, contrasting

Student Learning Tasks

Teacher Notes and References

In groups of four, discuss the questions provided by your teacher. (6)

As a class, share and record your ideas. (5)

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.5 Examine and interpret various visual media...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 6.1.1 Use advanced organization...

SLO 6.1.2 Use organizational planning...

SLO 6.1.5 Use selective attention...

SLO 6.2.4 Use note taking...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 2.2 Use several visual techniques...

SLO 4.2 Communicate effectively to work with others...

SLO 6.1.3 Use directed attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.8 Use self-evaluation to check...

Instructional and Learning Sequence

Tell students they will watch a video clip from the CBC archives called "Baby Boomers' Bad Habits." Give each student a copy of **Handout 4-1: "Point-form Notes Organizer: Baby Boomers' Babies Have Bad Habits."**

Students go over the "Intro" section individually.

Go over the "Through" section to make sure all vocabulary is understood.

Have students predict what might go in the blanks.

Have students go to <<http://archives.cbc.ca/>>. Look for "Search the Archives" on the sidebar. Type in "Baby boomers' bad habits." Students watch the clip and fill in the blanks on their organizers. They can view the clip a second time if necessary.

Students check the answers to the questions together. Have each of the students respond verbally to the video's information in one or two sentences. (There is another optional activity at the end of the fill-in-the-blanks exercise under the heading "Beyond.")

In the "Intro," or preparation section of the activity, make sure to explain the idioms mentioned if students cannot figure them out.

Language Features

Vocabulary

Idioms: put up a stink, red flag, baby boomers

Pronunciation

You may want to discuss reduction and linkage used by the speakers in the videos. If this listening activity creates a significant problem for your students, it would be a good idea to create another type of cloze in which the focus is on linkage and reduction instead of on content.

Academic Language Functions

Predicting

Prepare the students for the second video, *Seniors Are Cool!*

Ask them to use the title of the video to predict what they will see and hear. Give them a copy of **Handout 4-2: "Graphic Organizer for Listening: *Seniors Are Cool!*"**, which contains a list of the names of the seniors presented in the video and the questions asked by the interviewer. Students will fill in information about each senior's goals, attributes, et cetera. as they view the video.

After viewing the video, the class should compare answers in groups of four and then as a class. What ideas and values does this video present? Again, have each student respond in one or two sentences. Finally, have students compare/contrast the two videos, first in small groups and then as a class. Record ideas.

Language Features

Vocabulary

Idiom: cool

Discourse Features

discourse markers of comparison and contrast (review)

Student Learning Tasks

Go over the "Intro" section in **Handout 4-1: "Point-form Notes Organizer: Baby Boomers' Babies Have Bad Habits"** "Point-form Notes Organizer: Baby Boomers' Babies Have Bad Habits." (I)

Predict what might go in the blanks in the "Through" section of **Handout 4-1: "Point-form Notes Organizer: Baby Boomers' Babies Have Bad Habits."** (I)

Go to the Internet resource, watch the video, and complete **Handout 4-1: "Point-form Notes Organizer: Baby Boomers' Babies Have Bad Habits."** (I) Check answers together. (II) Respond verbally to the video's information in one or two sentences. (I)

Predict what you will see and hear in the second video. (I)

Given **Handout 4-2: "Graphic Organizer for Listening: *Seniors Are Cool!*"**, fill in information about each senior's goals, attributes, et cetera as you view the video. (I)

Compare answers in groups of four and then as a class. (II) (C) Respond in one or two sentences to the ideas and values in the video. (I)

Teacher Notes and References



Internet Resource: Video clip from CBC Archives: "Baby Boomers' Bad Habits"

available through the CBC archives <<http://archives.cbc.ca>>. Search for "Baby boomers' bad habits," Broadcast Feb 3, 1998. It is one of a series of clips and activities in the series *Getting Physical: Canada's Fitness Movement*. If the video is not accessible, search for a short article about Generation X and health. You may also want to look at the *Healthy Kids, Healthy Futures Task Force Report*, 2005, available at <www.gov.mb.ca/healthykids/>.

Handout 4-1: "Point-form Notes Organizer: Baby Boomers' Babies Have Bad Habits"



Video: *Seniors Are Cool!*

Handout 4-2: "Graphic Organizer for Listening: *Seniors Are Cool!*"

Seniors Are Cool!"

OR

Use the list of questions provided with the video.

Venn diagram (See Teaching and Learning EAL in the Senior Years section.)



A copy of the resource video can be obtained from the Manitoba Education, Citizenship and Youth library at <www.edu.gov.mb.ca/ks4/iru> (Call Number 8452), or through the Manitoba Seniors and Healthy Aging Secretariat at <www.gov.mb.ca/shas>.

Outcomes

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.1.1 Analyze and edit texts...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.4 Use the steps of the writing process...

SLO 3.1 Seek, organize, and synthesize information...

SLO 6.1.2 Use organizational planning...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.2.7 Use elaboration...

SLO 6.2.9 Use summarization

SLO 6.2.13 Use recombination

Instructional and Learning Sequence**Writing Assignment**

Have students write a short essay, contrasting the attitudes presented by the people in each video. In their written piece, they must make a value judgement about whether a preventative or prescriptive attitude is better concerning one's health today and in the future. They must also come to a conclusion about why baby boomers and seniors have the attitudes they do.

- a) Students first create a point-form outline. They should begin with an introductory paragraph with a good hook and thesis statement.
- b) Then, they decide on an appropriate organizational pattern for their essay. For example, they may choose to describe the baby boomers in one paragraph, contrast the seniors in a second, and determine the reasons for the differences in attitude and behaviour in the third.
- c) In the conclusion, they may decide to evaluate prescriptive and preventative health approaches, coming to a conclusion about the value of each.
- d) From this outline, students write their essay, using a variety of combining forms and sentence types. They should self-edit this first draft and create a final draft to be handed in for marking.

Language Features**Vocabulary**

preventative, prescriptive

Discourse Features

discourse markers to show contrast
point-form outline format
essay format for contrast

Structures

Structures for sentence combining: semicolons; subordinate/coordinate conjunctions; noun, adjective, and adverbial clauses, etc.

Academic Language Functions

contrasting, evaluating

Student Learning Tasks**Teacher Notes and References****Assignment**

Write a short essay, contrasting the attitudes presented by the people in each video.

- a) Create a point-form outline. Begin with an introductory paragraph containing a hook and a thesis statement.
- b) Decide on an appropriate organizational pattern.
- c) Evaluate prescriptive and preventative health approaches, coming to a conclusion about the value of each.
- d) Use a variety of combining forms and sentence types, self-edit the first draft, and create a final draft to be handed in for marking.

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.5 Examine and interpret various visual media...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.7 Use elaboration...

Instructional and Learning Sequence**Roundup**

Students write a personal response to the *Seniors Are Cool!* video. How does the information given in this video compare to attitudes in their countries of origin? Are the attitudes of seniors similar or different?

Language Features**Structures**

use of simple present tense (review)

Discourse Features

compare/contrast markers

Academic Language Functions

comparing, contrasting

Student Learning Tasks

Teacher Notes and References

Write a personal response to the *Seniors Are Cool!* video. (I)

Point-form Notes Organizer:
Baby Boomers' Babies Have Bad Habits

Intro:

What does the title of the video clip suggest to you? _____

What do you think the following expressions and idioms mean?

baby boomers: _____

put up a stink: _____

red flag: _____

Can you think of any bad habits that may be discussed in this clip? _____

Through:

Carefully read over all the questions below before you watch the clip. Try to figure out what might go in the blanks. As you watch the clip, record information to fill in the blanks and answer the questions.

1. Kids put up a stink. Why? _____

2. Kids in the mall:

Play _____

Don't _____ except in _____

3. Kids with parents who smoke _____

4. This adds up to failing on _____

5. Statistics showed the following about baby boomers' children:

a) Nutrition:

_____ do not get enough fruit and _____

_____ do not get enough _____ and cereals.

b) Physical activity:

_____ do not get enough.

c) Second-hand smoke:

_____ are exposed.

(continued)

Point-form Notes Organizer:
Baby Boomers' Babies Have Bad Habits (continued)

6. Baby boomers' children do not have healthy habits because of their _____.
7. Baby boomers:
 - a) _____ badly
 - b) _____ T.V.
8. Obesity: _____ of Canadians at the time of the story were overweight.
9. It is _____ that has kids _____ and parents _____.
10. Habits formed in childhood are _____.
11. Unless parents _____ their kids _____, thousands of children will grow and die of _____.

Beyond:

Write a personal response to this video clip. You may compare the situation in Canada to that in your country of origin, or you may discuss how this video clip applies to you, personally.

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper appears to be a standard notebook page or a sheet of stationery.

**Graphic Organizer for Listening:
Seniors Are Cool!**

I. Mrs. Seal	Intro:
	Why did you choose Tae Kwon Do?
	Do you enjoy teaching?
	What do you say to people who think seniors are slow and helpless?
	So, will you tell us your age?
	Do you feel more secure?
	Conclusion:

(continued)

**Graphic Organizer for Listening:
Seniors Are Cool! (continued)**

II. School Volunteers	Intro:
	So, how does your problem work?
	First speaker:
	So what are you guys doing here today?
	So, will you tell us your age?
	What's your favourite part of this?
	Conclusion:

(continued)

**Graphic Organizer for Listening:
Seniors Are Cool! (continued)**

III. Mr. Robertson	Intro:
	Mr. Robertson speaks:
	How long is your average snowshoe trip?
	What ages of people come on these hikes?
	Mr. Robertson, why do you snowshoe?
	Mr. Robertson, how do you stay in shape?
	Conclusion:

(continued)

**Graphic Organizer for Listening:
Seniors Are Cool! (continued)**

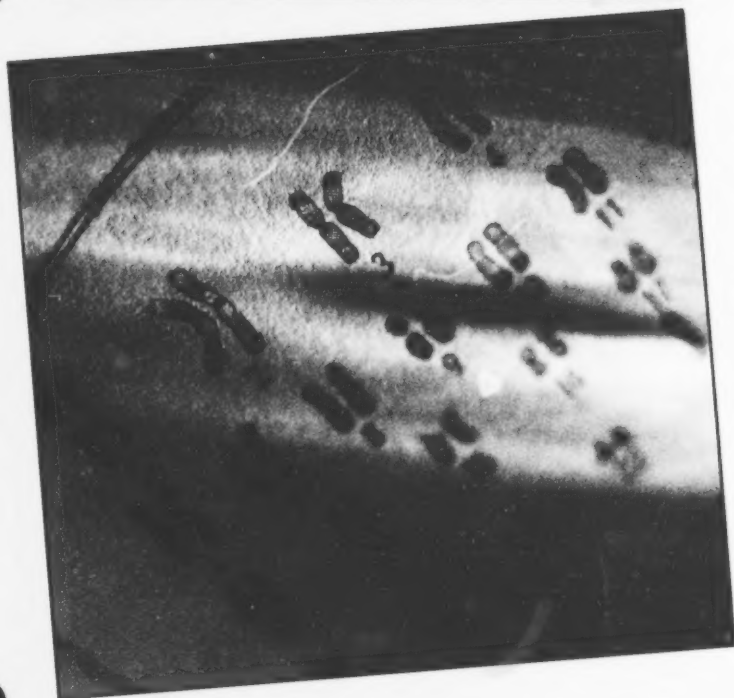
IV. i. Mr. Strutwa: Restoring cars	Intro:
	Why did you decide to restore old cars after you retired?
	What's your favourite type of car to work on?
	What kind of car is this one here?
	Is that a real Ferrari?
	How long have you been restoring cars?

(continued)

**Graphic Organizer for Listening:
Seniors Are Cool! (continued)**

IV. ii: Mr. Strutwa: Keeping fit	Intro:
	Mr. Strutwa, how long have you been working out?
	What does your average day look like?
	What would you say to younger people wanting to start an exercise program?
	What's the secret of your success?





Topic 2
**New, Improved?
Human Genetic
Issues**

(2–4 lessons)

Students engage with a variety of texts on a controversial current topic. They analyze texts for viewpoint and implications. They research a short topic, prepare an outline, and explain their findings in an oral presentation. Students write a summary from notes, critique a movie, and discuss the benefits and dangers of genetic manipulation.

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.7 Evaluate a given text...

SLO 6.2.1 Use resourcing to access...

SLO 6.2.7 Use elaboration...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence**Sequence 1****Activation****Journal Entry**

- a) If you could choose three physical characteristics for your future child, what would they be and why? Have students write for 10 or 15 minutes, and then ask for volunteers to share their choices.
- b) Brainstorm with the students a list of characteristics that are genetically determined.
- c) Discuss what other factors influence a child's development. Is personality inherited? (heredity vs. environment; nature vs. nurture)
- d) Give students a chart of 8 to 10 human characteristics such as obesity, blue eyes, heart disease, alcoholism, shyness. Have them mark each trait as "nature" or "nurture."
- e) Read the listed articles to find how heredity or environment may influence various traits.
- f) Discuss the previous list of characteristics in light of the readings.
- g) Journal entry: If you could prevent your child from inheriting something you do not like about yourself, would you?

Language Features**Vocabulary**

heredity, nature vs. nurture, human characteristics (e.g., obesity, shyness)

Expressions from "The Big Question": a case in point, heck, average Joe, a gaggle, great strides

Discourse Features

rhetorical questions

expressions of contrast (e.g., on the other hand)

Academic Language Functions

discussing

predicting

classifying

justifying

Student Learning Tasks

- a) In your journal, respond to which three physical characteristics you would choose for your future child. What would they be and why? (I)
- b) Brainstorm a list of characteristics that are genetically determined. (C)
- c) Discuss other factors that influence a child's development. (C)
- d) Given a chart of 8 to 10 human characteristics, mark each trait as "nature" or "nurture." (I)
- e) Read the listed articles to find how heredity or environment may influence various traits. (I)
- f) Discuss the previous list of characteristics in light of the readings.
- g) Journal entry: Respond to this hypothetical statement: If you could prevent your child from inheriting something you do not like about yourself, would you?

Teacher Notes and References



Handout 4-3: "NewsHour Extra for Students: The Big Question"

Internet Resources: "Human

Genome: Nature vs. Nurture: How Much of a Person's Fate is Written in the Genes?" at: www.news.bbc.co.uk/1/hi/in_depth/sci_tech/2000/human_genome/760724.stm. This article suggests that sequencing the human genome will make the role of environment in determining our health more, rather than less, clear.

"Nature vs. Nurture Revisited" at: www.pbs.org/wgbh/nova/genome/debate.htm. This article emphasizes the "seesaw struggle" between our genes and environment, concluding that our increased ability to manipulate genetic wiring may boost the influence of nature.

"Is Society Responsible for Mental Illness?" at: www.news.bbc.co.uk/1/hi/health/1079481.stm. This article reports on the role of genetics and environment on mental illness. It cautions that too much emphasis may be put on a medical model of wellness.

Caution: This lesson is not designed as a science lesson, but as an opportunity to discuss a current issue with many practical and ethical implications. Some things to keep in mind:

- approach all issues with sensitivity
- establish parameters for discussions
- ensure that the issues do not become personalized or directed at individual students
- protect the interests of individual students by finding out in advance whether any student would be personally affected by the discussion
- accept that there may not be a single "right answer" to a question or issue
- respect everyone's right to voice opinions or perspectives
- help students clarify the distinction between informed opinion and bias

Outcomes

SLO 1.5 Examine and interpret various visual media...

SLO 6.2.3 Use grouping of items to classify...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.12 Use inferencing to guess the meanings...

Instructional and Learning Sequence

- a) Brainstorm different media depictions of humans who have been genetically altered. Encourage students to contribute examples from their own popular culture (e.g., anime). What views of genetic engineering does each reflect?
- b) Using a Venn diagram or other graphic organizer, group them into positive and negative depictions. Is there any overlap?
- c) Review literary sources or scenes from movies that deal with human engineering. *Gattaca* deals most directly with a future world filled with genetically based discrimination. Give enough context to understand the scene.

Discussion questions (depending on the scene):

1. What are the genetic alterations depicted?
2. What is their purpose?
3. What are the consequences (intended and unintended for the characters? Society?)

Language Features

Vocabulary

alter, depict, creature, discrimination, consequences (intended/unintended); other vocabulary necessary to understand the movie scenes

names of popular "modified" characters (e.g., Spider-Man)

Academic Language Functions

classifying

analyzing and interpreting

describing

Student Learning Tasks

- a) Brainstorm different media depictions of humans who have been genetically altered. (C)
- b) Using a Venn diagram or other graphic organizer, group the depictions into positive and negative categories. (C)
- c) Discuss questions related to scenes from the movies. (C)

Teacher Notes and References

Venn diagram (see Teaching and Learning EAL in the Senior Years section)

Literary options: *Frankenstein*, *Brave New World*, *Dr. Jekyll and Mr. Hyde*

Movie viewing options: *Gattaca*, *Frankenstein*, *Blade Runner II*, *Brave New World*, *Species*, *X-Men*, *Terminator 2*, *Star Wars Episode II: Attack of the Clones*, *The 6th Day*, *Spider-Man* (accidental modification)

Scientists, philosophers, artists, and ordinary people have long been fascinated with the prospect of altering the human body to correct “flaws” or to enhance its abilities. What was a fantasy in the past is near reality today.



These movies contain some strong scenes. It is not necessary to view the whole movie, but enough scenes should be viewed to allow students to answer the discussion questions. Make sure public performance rights for educational use of the video are obtained before showing it to the class.

Suggestion: Use closed captioning, and view clips at least twice.

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.5 Examine and interpret various visual media...

SLO 1.7 Evaluate a given text...

SLO 2.3.2 Demonstrate increasing awareness of... rhetorical forms...

SLO 2.4 Use the steps of the writing process...

SLO 6.1.1 Use advanced organization...

SLO 6.2.1 Use resourcing to access...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Option 1

View a number of scenes or the entirety of one of these movies (Gattaca recommended). Provide a plot synopsis and pre-teach essential vocabulary, particularly terms related to the scientific process and important colloquialisms.

Journal Entry: Immediately after viewing each scene, or at the end of the film, have students describe in their journals the strongest visual or sound image that they remember, as well as their immediate reaction to the film (e.g., sad, surprised, frightened, pleased).

After viewing, ask questions about the theme of the film. What is the filmmaker's opinion about the potential of genetic engineering? Do students agree with this view? Which scientific and societal aspects of this film seem to be possible in the future, and which seem improbable?

Writing Task

Students write a critique of the science of the film, based on current research (must cite sources). This will necessitate researching the topic of genetic manipulation. Students use peer editing to focus on the six elements.

Language Features

Vocabulary

as required by the movie
theme, improbable, realistic, aspects

Discourse Features

format of critical review—introduction, thesis, summary, critique, conclusion and present verb tense
format of citations

Academic Language Functions

describing
discussing
evaluating
inferring
predicting
summarizing
analyzing and interpreting

Student Learning Tasks

View a number of scenes or the entirety of one of these movies (Gattaca recommended). (C)

Journal Entry: Describe in your journal the strongest visual or sound image that you remember, as well as your immediate reaction to the film. (I)

Write a critique of the science of the film, based on current research (must cite sources). (I)

Peer-edit to focus on the six elements. (P)

Teacher Notes and References

See page 29 for a list of potential movies.

For the Writing Task: Internet access or recent print resources



Give class time to research. If possible, prepare a web page with links to recommended resources. Emphasize that this is not a standard "movie review," but should examine the science involved.

Outcomes	Instructional and Learning Sequence													
SLO 2.1.3 Use developing control of grammatical features... SLO 2.2 Use several visual techniques... SLO 2.3 Produce a variety of short and extended text forms... SLO 2.3.3 Produce effective oral presentations. SLO 3.1 Seek, organize, and synthesize information... SLO 3.2 Develop and implement a plan for researching... SLO 3.3 Quote from or refer to sources... SLO 4.1 Use language to encourage... SLO 5.7 Select and present ideas...keeping in mind the intended audience. SLO 6.1.1 Use advanced organization... SLO 6.2.1 Use resourcing to access... SLO 6.2.4 Use note taking... SLO 6.2.9 Use summarization... SLO 6.2.11 Use transfer...	Option 2 Divide the students into three groups. Assign each group a different aspect of the Human Genome Project to research. Scientific Findings: What is the science behind the project? What have we learned? What are the important scientific terms and discoveries? Applications: How can the knowledge coming from this project possibly be applied to human health? (Include a case study.) Ethical Implications: What are the main ethical issues we face with mapping the human gene (e.g., treatment of disease, stem cell research, genetic screening and modification)? 1) Presentation: a) Each group should prepare one or two posters or a computer presentation with the highlights of their topic. Use illustrations wherever they will help. b) Display the projects and have each group explain their findings. c) Each group should also prepare a one-page outline of their presentation to aid note taking. Allow time after each presentation for clarification and further questioning, and for students to view the posters. Students must complete their notes to use in the writing task. 2) Writing Task: Using only the notes from the presentations, students write a one-page report on the importance of the Human Genome Project. Remind students to use separate paragraphs for each topic.													
SLO 6.3.1 Use questioning for clarification...	<table border="1"> <tr> <td rowspan="4">Language Features</td><td>Vocabulary</td></tr> <tr> <td>Vocabulary review from Module 3, Topic 5A: Biotechnology: GM Foods lesson</td></tr> <tr> <td>Discourse Features</td></tr> <tr> <td> Expressions for clarification: What did you say was the ...? What was the first point in #3? How do you spell ...? (These are simple questions, but listen for fossilized errors in question order.) summary/paraphrase </td></tr> <tr> <td rowspan="4"></td><td>Academic Language Functions</td></tr> <tr> <td>reconstructing point-form notes into sentences</td></tr> <tr> <td>explaining</td></tr> <tr> <td>summarizing</td></tr> <tr> <td rowspan="2"></td><td>expressing opinion</td></tr> <tr> <td></td></tr> </table>	Language Features	Vocabulary	Vocabulary review from Module 3, Topic 5A: Biotechnology: GM Foods lesson	Discourse Features	Expressions for clarification: What did you say was the ...? What was the first point in #3? How do you spell ...? (These are simple questions, but listen for fossilized errors in question order.) summary/paraphrase		Academic Language Functions	reconstructing point-form notes into sentences	explaining	summarizing		expressing opinion	
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	Academic Language Functions													
	reconstructing point-form notes into sentences													
	explaining													
	summarizing													
	expressing opinion													

Student Learning Tasks

In three groups, research a different aspect of the Human Genome Project. Focus on:

- Scientific findings
- Applications
- Ethical implications (6)

1) Presentation

- a) Prepare one or two posters or a computer presentation with the highlights of your topic. (6)
- b) Display your project and explain the findings. (6)
- c) Prepare a one-page outline of your presentation to aid note taking. (6)

2) Individual Writing Task

Using only the notes from the presentations, write a one-page report on the importance of the Human Genome Project. (1)

Teacher Notes and References

Internet access or recent print resources



This could be set up as a debate.

Outcomes	Instructional and Learning Sequence																		
SLO 1.3 Develop and express a personal position in a variety of ways. SLO 2.1 Show sufficient control over linguistic structures... SLO 4.3 Use clear and respectful language... SLO 5.3 Analyze ways in which ...contemporary culture SLO 5.4 Show understanding of the effect of cultural background... SLO 6.2.11 Use transfer... SLO 6.2.13 Use recombination...	Discussion Scientists were able to clone a sheep (Dolly) in 1997. What do students know about Dolly and subsequent attempts to clone animals? What is the potential of cloning for animals? Humans? What are the possible advantages and dangers of cloning extinct animals (think <i>Jurassic Park</i>)? Humans? <table border="1"> <tr> <td rowspan="2">Language Features</td> <td>Discourse Features</td> </tr> <tr> <td>expressions of opinion agreement/disagreement</td> </tr> <tr> <td rowspan="4"></td> <td>Academic Language Functions</td> </tr> <tr> <td>agreeing/disagreeing</td> </tr> <tr> <td>clarification</td> </tr> <tr> <td>asking for details</td> </tr> <tr> <td></td> <td>restating</td> </tr> </table> View Using teacher-developed preview questions, students view one or both of the suggested video clips to look at possible benefits and dangers of cloning. Students exchange their personal reactions to the videos. <table border="1"> <tr> <td rowspan="2">Language Features</td> <td>Vocabulary</td> </tr> <tr> <td>pre-teach any necessary vocabulary</td> </tr> <tr> <td rowspan="4"></td> <td>Academic Language Functions</td> </tr> <tr> <td>listening for main ideas</td> </tr> <tr> <td>comparison</td> </tr> <tr> <td>evaluation</td> </tr> </table>	Language Features	Discourse Features	expressions of opinion agreement/disagreement		Academic Language Functions	agreeing/disagreeing	clarification	asking for details		restating	Language Features	Vocabulary	pre-teach any necessary vocabulary		Academic Language Functions	listening for main ideas	comparison	evaluation
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	pre-teach any necessary vocabulary																		
	Academic Language Functions																		
	listening for main ideas																		
	comparison																		
	evaluation																		

Student Learning Tasks

Discuss: What is the potential of cloning for animals? Humans? (C)

View one or both video clips to look at possible benefits and dangers of cloning using preview questions. (C)

Share the reactions or comments about the issues or concerns raised in the videos.

Teacher Notes and References

Visuals: Dolly, the cloned sheep, or other cloned animals (teacher-provided)



Video Clip: "Dolly's Death Raises Big Questions" (time: 2:22) at:

<<http://archives.cbc.ca/400d.asp?id=1-75-738-4484>>

"Man with CF sees cloning as 'second chance at life'" (time: 8:53) at:

<<http://archives.cbc.ca/500f.asp?id=1-75-738-4506>>

Teacher-developed preview guidelines

Outcomes

SLO 1.5 Examine and interpret various visual media...

SLO 5.2 Analyze and use the appropriate level of formality...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.3.3 Use positive self-talk to reduce anxiety

Instructional and Learning Sequence

View the biotechnology cartoons on **Handouts 4-4 and 4-5**. What ideas about the Human Genome Project and genetic engineering do the cartoons express? What views of modern society do they express?

Language Features

Vocabulary

copyright, commerce

Discourse Features

format and purpose of political cartoon

Academic Language Functions

hypothesizing

inferring

evaluating

Journal Entry

After studying and discussing the topic of genetic engineering, students state whether their views about it have changed.

Learning Log

Students write three positive comments about their work on this lesson (e.g., It was hard for me to explain my part of the poster, but I tried. I'm able to find the main points in most of the articles, even though I don't understand everything. I asked for clarification when I didn't get all the notes).

Student Learning Tasks

View the biotechnology cartoons on **Handouts 4-4 and 4-5**. What ideas about the Human Genome Project and genetic engineering do the cartoons express? **(I)**

Write a journal entry discussing your changing view on genetic engineering.

Write three positive comments about your work on this lesson. **(I)**

Teacher Notes and References**Handouts 4-4 and 4-5:**

Biotechnology cartoons. There is also a cartoon on the "true meaning of the human genetic code" at <http://cagle.state.msn.com/news/gene/gene9.asp>.

**"The Science Behind the Human Genome Project" at:**

www.ornl.gov/sci/techresources/Human_Genome/project/info.shtml

"Our Genes, Our Choices" at:

www.pbs.org/fredfriendly/ourgenesold/index.html

"Canada Enters the Clone Age" at:

<http://archives.cbc.ca/300c.asp?id=1-75-738>



NewsHour Extra for Students: The Big Question

By Heather Jones, 17, Texas

The Human Genome Project has opened up new opportunities for mankind. What will the future hold?

Perhaps someday people will never need glasses because genes from eagles' eyes have been combined with their parents' DNA.

Wings! We could all have wings! Beautiful feathered wings that would be utterly useless because of our body weights, but still, it'd be awesome!

There could be immunity to disease or viruses, such as anthrax, AIDS, or influenza. But at the same time, there is the possibility for abuse. As in any realm of science, progress brings not only the ability to do good, but also the ability to do ill.

A Better Human?

With the information scientists are gathering from their mapping of the genome, we can make the same substances our bodies make. A case in point is insulin, which is grown by combining the piece of genome which codes for human insulin with a chunk of bacteria. The bacteria doesn't recognize that anything has changed, it merely starts pumping out insulin, which scientists can then use to save the lives of millions who suffer from diabetes.

Clearly, there are many benefits to be derived from such technology, from medicines to the enhancement of our natural abilities.

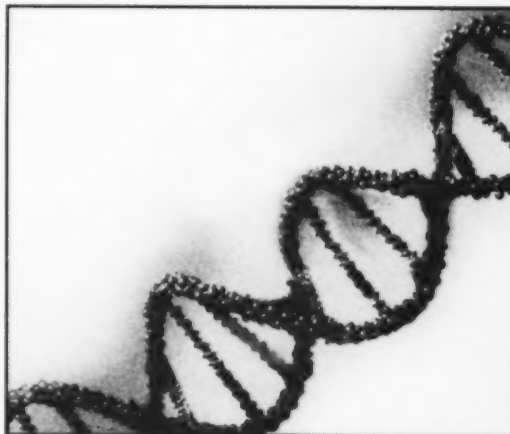
But what happens when obsessive parents try to genetically engineer their kid to be the ultimate basketball player?

Is this fair to the child? What if the child doesn't want to be eight feet tall? What if the child's true calling in life is to be a jockey, only they can't, because their parents messed with their genes?

And how would this overly tall child be accepted among his peers? As anyone who's ever been made fun of well knows, being different from the other students means your school life is straight from heck.

Before we can answer these questions, we must ask ourselves who would actually use this technology? Certainly it's not going to be the average Joe and Josephine who'll be able to afford something as expensive as a designer baby. It will probably be the rich, the powerful, the well connected, and a gaggle of scientists.

But more than that, mapping the genome could place stress on not only the social structure but the foundations of democracy itself. Our country was founded on a premise that "all men are created equal." But what happens when all men are not created equal? Specifically, when the rich and powerful are created superior to the average and the poor?



(continued)

NewsHour Extra for Students: The Big Question (continued)

The Genes Made Me Do It

Another question has to do with the use of genetic information. Let's say that someone has a gene that makes them susceptible to cancer if they're exposed to chlorine. Can their insurance company refuse to cover them if they go swimming? Can their company, since they are providing them insurance, decree that they may not go swimming?

If a student is found to have a violence gene, can the schools refuse to enroll them even if the student has never acted out? Could someone be denied a job because they're considered a genetic "threat"? Could a determination that someone has the gene for "violent" (or even "generous") be accepted as character evidence in a court of law?

Will a person who's been told all their life they have "bad" genes, which make you selfish and violent, eventually become selfish and violent?

We're still unclear about how much of our personalities are determined by genes, and how much by environment. Aside from the whole nature vs. nurture debate, there is also the question of free will vs. determinism, a philosophical concept much like fate and destiny.

People who believe their actions are dictated entirely by their genes might take even less responsibility for their actions. A man or woman who becomes angry while in heavy traffic and ends up shooting a rubber-necker for driving too slowly may argue it isn't their fault because they have genes that make them snap very easily, and they can't be held responsible for their actions.

Genetic screening can, of course, be useful. Parents who carry recessive genes for deadly biological diseases such as sickle-cell anemia or Tay-Sach disease can find out their children will be affected. With some sort of gene replacement therapy, the defective genes that would normally cause the child to die early could be replaced with normal, healthy ones so that the parents could have a healthy child.

The government and military could also use the new information for either good or bad. They could develop new and better ways to resist biological warfare attacks. On the other hand, however, they could develop new and "better" biological weapons, specially tailored to attack certain parts of the human system. Perhaps they could develop a weapon that would render enemy soldiers blind and deaf. Will the good here outweigh the bad?

The Map of Uncertainty

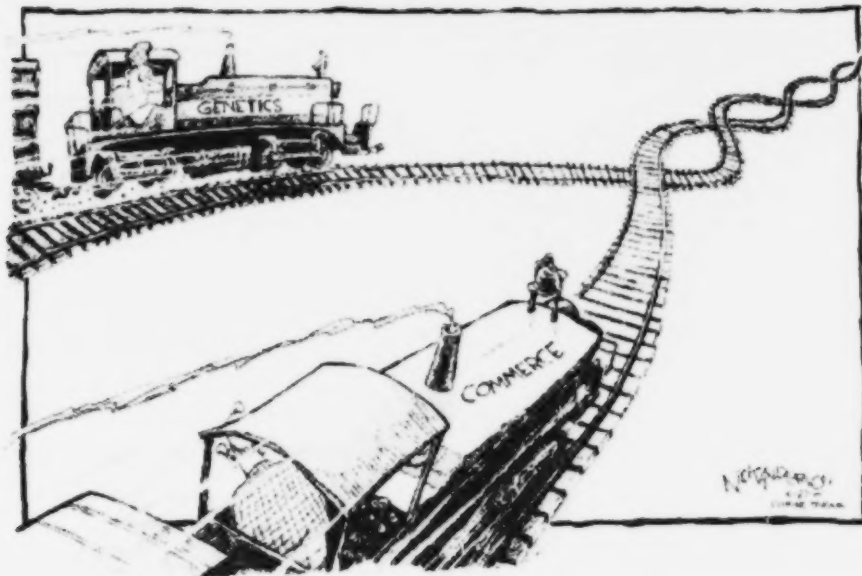
The study of genetics, much like other scientific endeavours, has both good points and bad. On one hand, great strides are being made in understanding how the human body functions. We could find out where we came from and the migration patterns of ancient man.

Children that otherwise might have been born with rare and deadly diseases may be born healthy and happy.

But at the same time, ethical and philosophical questions must and will be addressed. A psychologically dangerous attempt at "normalization" could result as people begin to view their differences as unwanted diseases or defects that must be removed from the genetic structure of their children.

In the end, we can only look to the future with wide eyes, hopefully ready to accept the good and to fight against the evil.

Genetics and Commerce



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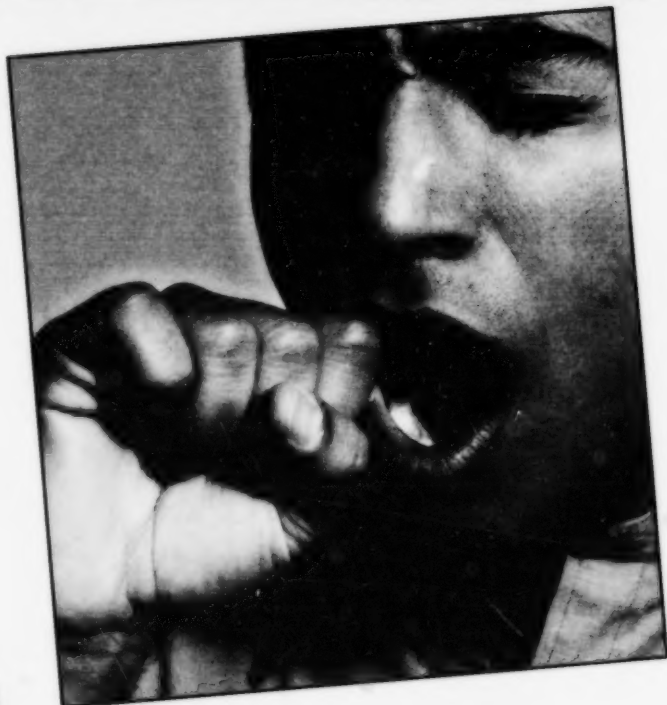


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Topic 3
**Sleep and
Our Bodies**

(2–3 lessons)

Students read a wide selection of texts to select information for a choice of writing tasks, take notes, document, summarize, analyze discourse features that indicate attitudes, and engage in critical thinking. They represent the results of an informal survey and conduct/write up a more formal one, or they write a brochure or a proposal.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.4 Show an awareness of organizational patterns...

SLO 1.7 Evaluate a given text...

SLO 4.1 Use language to encourage...

SLO 6.2.7 Use elaboration...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.3.2 Use co-operation...

SLO 1.5 Examine and interpret various visual media...

SLO 5.4 Show understanding of the effect of cultural background...

SLO 6.2.7 Use elaboration...

SLO 6.2.12 Use inferencing to guess the meanings...

Instructional and Learning Sequence

Sequence 1

Activation

Distribute sleep quotations. Assign a different quotation to each pair of students, to read and explain to the group the ideas or feelings about sleep expressed in the quotation.

Discussion

Ask students: What is the purpose of sleep?

There is no need for them to be scientific in their responses.

Language Features

Discourse Features

form of proverb
figurative language

Academic Language Functions

explaining
interpreting

- View the cartoon of sleepy school children. Describe the action in each frame.
- Discuss: Why are children often tired at school?
- Survey the class: What time did students go to bed last night? How many feel tired? Why? Do they feel they get enough sleep?

Language Features

Vocabulary

school board, zzz (representing sleep)

Academic Language Functions

describing a sequence
inferring
discussing

Student Learning Tasks

With a partner, read and explain to the group the ideas or feelings about sleep expressed in the quotation from Handout 4-6. (E)

Discuss the purpose of sleep. (C)

- View and describe **Handout 4-7: "School Start Times."**
- Discuss the question: Why are children often tired at school? (C)
- Answer the survey questions. (C)

Teacher Notes and References

Handout 4-6: "Sleep Quotations"



Handout 4-7: "School Start Times" cartoon



This cartoon alludes to the discussions in North America about school start times. Some people feel that students would do better if they started later.

Outcomes	Instructional and Learning Sequence					
SLO 2.3.1 Use the structures and language features... SLO 3.1 Seek, organize, and synthesize information... SLO 6.1.2 Use organizational planning... SLO 6.2.3 Use grouping of items to classify... SLO 6.2.8 Use imagery in the form of mental or actual pictures...	Survey of Sleep Hours Students can record their own hours of sleep for the previous night or over several nights. Compile these into one class chart. Survey students who sleep less than seven hours for the reasons. Analyze the reasons and make a graphical representation (bar, pie, other) of the results. Optional Writing Task Students write a paragraph that interprets the information on the graph. <table border="1"> <tr> <td rowspan="4">Language Features</td><td>Vocabulary compile</td></tr> <tr> <td>Discourse Features discourse markers for cause and effect, comparison</td></tr> <tr> <td>Academic Language Functions expressing cause and effect synthesizing interpreting data</td></tr> <tr> <td></td></tr> </table>	Language Features	Vocabulary compile	Discourse Features discourse markers for cause and effect, comparison	Academic Language Functions expressing cause and effect synthesizing interpreting data	
Language Features	Vocabulary compile					
	Discourse Features discourse markers for cause and effect, comparison					
	Academic Language Functions expressing cause and effect synthesizing interpreting data					

Student Learning Tasks

Record your hours of sleep for the previous night or several-night period. (I)

Write a paragraph that interprets the information on the graph. (I)

Teacher Notes and References

Outcomes

SLO 2.3.1 Use the structures and language features...

SLO 2.3.2 Demonstrate increasing awareness of... rhetorical forms...

SLO 3.1 Seek, organize, and synthesize information...

SLO 3.2 Develop and implement a plan for researching...

SLO 3.3 Quote from or refer to sources...

SLO 6.1.1 Use advanced organization...

SLO 6.1.2 Use organizational planning...

SLO 6.1.7 Use problem identification...

SLO 6.2.1 Use resourcing to access...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.9 Use summarization...

SLO 6.2.11 Use transfer...

Instructional and Learning Sequence

Writing Tasks

Introduce the main writing tasks. Students choose one option to be completed for the end of the topic:

- a) Students plan a survey based on the different effects of sleep deprivation as described in the readings. Remind them to maintain the privacy of their subjects. Display the data graphically, and write a short summary of the findings, using appropriate reporting verbs. Include a paragraph interpreting the findings, using modals and other hedging language.
- b) Students develop a brochure or a web page that offers information to other teenagers about the importance of sleep and tips for getting adequate sleep as a student. Information should be displayed using lists, short paragraphs, clear language, and illustrations.
- c) Students use the information from the readings and the initial survey of student sleep hours to write a proposal to the school authorities to modify the school day to improve student sleep habits. Include citations from readings.

Language Features

Vocabulary

sleep deprivation

Structures

modals, reporting verbs

Discourse Features

hedging markers

Academic Language Functions

interpreting data

explaining

synthesizing

summarizing

Student Learning Tasks**Assignment**

Choose one option:

- a) Plan a survey based on the different effects of sleep deprivation as described in the readings. (I)
- b) Develop a brochure or a web page that offers information to other teenagers about the importance of sleep and tips for getting adequate sleep. (I)
- c) Write a proposal to the school authorities to modify the school day to improve student sleep habits. (I)

Teacher Notes and References

When a news magazine discusses a major story, it often reports on a range of research findings. Each research study focuses on a specific investigation. The magazine then makes the connections that are relevant to the general public. Student writers must do the same thing, connecting information and viewpoints from several places to produce something of their own. In order to complete the tasks, students will need to gather information from several sources. Discuss the process of surveying general information about the topic, reading several sources, and choosing relevant information for the specific task.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 1.4 Show an awareness of organizational patterns...

SLO 1.6 Interpret a range of texts...

SLO 6.1.1 Use advanced organization...

SLO 6.1.5 Use selective attention...

SLO 6.2.4 Use note taking...

SLO 1.2 Respond to texts with increasing independence...

SLO 2.2 Use several visual techniques...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

Instructional and Learning Sequence

Sequence 2

A series of readings follow in this sequence. Teachers may elect to use all or some of the readings. Pre-reading and post-reading questions are provided to assist students in comprehending and analyzing the reading.

Distribute the article "What Happens When We Sleep?"

Pre-reading Questions

1. What kind of article is this? (general introduction)
2. Preview the article's organizing features and choose an efficient method for taking notes.
3. Given the task you have chosen, what kind of information will this article likely provide?

Post-reading Questions

1. How do scientists track the stages of sleep?
2. What happens during the stages of deepest sleep?
3. Define REM sleep. When does it occur?
4. According to the restorative theory and the adaptive theory, why is REM sleep important for young people?
5. What is the scientific term for biological "clock"?
6. What happens when a person's biological clock and society's clock "get out of sync"?

Language Features

Vocabulary

REM, deprived, reinforce, adept, circadian rhythm, correspond to, core body temperature, alert, conversely, irresistible, "out of sync," ensue

Distribute **Handout 4-8: "Types of Sleep"**

Pre-reading Questions

1. What different kinds of sleep are you aware of?
2. What do you think is the purpose of dreaming?
3. Do sleep patterns change as we get older?

Post-Reading

Construct a chart to compare the two kinds of sleep described in the reading. (See the sample chart.)

Types of Sleep Chart

Type		
Electrical activity		
What happens		
How it changes with age		

Student Learning Tasks

Consider the pre-reading questions.

Preview the article's organizing features and choose an efficient method for taking notes. (I)

Read the article and take notes.

Respond to the comprehension questions drawing on the notes.

Consider the pre-reading questions (I)

Read the article on **Handout 4-8: "Types of Sleep."** (I)

Construct a chart to compare the two kinds of sleep described in the reading. (I)

Teacher Notes and References

Internet Resource: "What Happens When We Sleep?" (reading level, medium, 9.1,

Flesch-Kincaid readability level) at: www.health.discovery.com/centers/sleepdreams/basics/ or another article that gives an introduction to sleep cycles and the theories of why we sleep.



Handout 4-8: "Types of Sleep" (reading level: easy, 8.2, Flesch-Kincaid readability level)

Outcomes	Instructional and Learning Sequence													
SLO 1.1 Engage with increasingly difficult oral and/or visual texts... SLO 1.2 Respond to texts with increasing independence... SLO 1.4 Show an awareness of organizational patterns... SLO 6.1.1 Use advanced organization... SLO 6.1.5 Use selective attention... SLO 6.2.7 Use elaboration... SLO 6.2.7 Use elaboration... SLO 6.2.9 Use summarization...	Pre-reading Questions a) Note opening sentence: It's 7:45 a.m. Don't expect a cheery "good morning" from Kami Obradovic. "I don't know my own name," said the 16-year-old student. "I'm not really coherent." b) Predict the contents and the main idea of the article. c) Scan the article to learn more about the effect of sleep loss on teenagers. Try to answer all of the comprehension questions in 10 minutes. Comprehension Questions d) Look for reporting verbs. In one phrase or sentence, summarize the contents of this passage (effects of poor sleep on learning in adolescents). What advice do the experts give? Do you agree with the advice? e) Take notes on information that is relevant to the writing task. <table border="1"> <tr> <td rowspan="5">Language Features</td> <td>Vocabulary</td> </tr> <tr> <td>brag, burden, deprivation, lifestyle, optimum, sighs, stint, sufferers, symptoms</td> </tr> <tr> <td>From AWL: attitude, coherent, criteria, depression, grade, institutions, insufficient, issue, job, link, medical, research, revealed, team, volunteer</td> </tr> <tr> <td>Reporting verbs: have concluded, found, has determined, shows, says, builds on, suggests, may be linked</td> </tr> <tr> <td>Discourse Features</td> </tr> <tr> <td>reporting verbs</td> </tr> <tr> <td>Academic Language Functions</td> </tr> <tr> <td>describing/explaining</td> </tr> <tr> <td>expressing cause and effect</td> </tr> <tr> <td>evaluating</td> </tr> <tr> <td>predicting</td> </tr> <tr> <td>summarizing</td> </tr> </table>	Language Features	Vocabulary	brag, burden, deprivation, lifestyle, optimum, sighs, stint, sufferers, symptoms	From AWL: attitude, coherent, criteria, depression, grade, institutions, insufficient, issue, job, link, medical, research, revealed, team, volunteer	Reporting verbs: have concluded, found, has determined, shows, says, builds on, suggests, may be linked	Discourse Features	reporting verbs	Academic Language Functions	describing/explaining	expressing cause and effect	evaluating	predicting	summarizing
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	Discourse Features													
reporting verbs														
Academic Language Functions														
describing/explaining														
expressing cause and effect														
evaluating														
predicting														
summarizing														

Student Learning Tasks

- a) Consider the three pre-reading questions. (I)
1. How many hours do you think a young child requires? An adult? A teenager?
 2. What are the results of not getting enough sleep?
 3. How serious a problem for young people is lack of sleep?
- b) Predict the contents and the main idea of the article.
- c) Scan the article to learn more about the effect of sleep loss on teenagers. Try to answer all of the comprehension questions in 10 minutes.
- d) Scan the article to find the answers to five comprehension questions. (I)
1. How much sleep should teenagers be getting at night?
 2. What is the risk that many teenagers don't know about?
 3. What are three reasons for insufficient sleep in teenagers?
 4. Why do older teens miss sleep?
 5. What does the researcher mean when she says, "Less sleep does not always mean more time"?
- e) Take notes on information that is relevant to the writing task.

In one phrase or sentence, summarize the contents of this passage (effects of poor sleep on learning in adolescents). (I)

Teacher Notes and References

Internet Resource: "Sleep-Deprived Teens Run Risk of Depression" at:

<[www.canoe.ca/LifewiseFamilyHomework01/0305_sleep_cp.html](http://www.canoe.ca/LifewiseFamily/Homework01/0305_sleep_cp.html)>

Outcomes

SLO 1.6 Interpret a range of texts...

SLO 6.1.5 Use selective attention...

SLO 6.2.4 Use note taking...

Instructional and Learning Sequence

Distribute **Handout 4-9**: "The Consequences of Insufficient Sleep for Adolescents."

Scan the title and first paragraph. Predict the contents and the main idea of the article.

Pre-reading Questions

1. What is the purpose of the section beginning: "In this article I provide an overview"?
2. What will the remainder of the article do?

Scan the rest of the excerpt. Take notes.

Language Features

Vocabulary

From AWL: choose a few of these words to focus on:
abstract, area, aspects, brief, complex, conflicts,
consequence, contribute, cycle, data, defined, depressed,
diminished, documenting, domains, empirical, enormous,
evaluation, evidence, factors, identify, impact, incompatible

Discourse Features

transition markers
overview

Academic Language Functions

expressing purpose
showing connection

Student Learning Tasks

Scan the title and first paragraph on **Handout 4-9**: "The Consequences of Insufficient Sleep for Adolescents." Predict the contents and the main idea of the article. (I)

Consider the pre-reading questions. Scan the rest of **Handout 4-9**: "The Consequences of Insufficient Sleep for Adolescents" and take notes. (I)

Teacher Notes and References

Handout 4-9: "The Consequences of Insufficient Sleep for Adolescents"

(difficult—Grade 12)



Note the intended audience and reading level.

This article will be extremely challenging, with many difficult words. This is a good time to encourage students to use discourse features and markers to find the main idea and supporting details in each paragraph.

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 1.4 Show an awareness of organizational patterns...

SLO 1.6 Interpret a range of texts...

SLO 1.7 Evaluate a given text...

SLO 4.6 Respond to and critique a variety of individual perspectives...

SLO 5.4 Show understanding of the effect of cultural background...

SLO 6.1.5 Use selective attention...

Instructional and Learning Sequence

Distribute one or both of the following readings: **Handout 4-10**: "Normal Sleep and Sleep Hygiene" (this brochure from the Canadian Sleep Society provides much exploitable content and an example of the brochure genre) and/or **Handout 4-11**: Excerpt from "Missed ZZZs, More Disease?"

- a) Students can read the excerpt from "Missed ZZZs, More Disease?" and chart the evidence for the two points of view expressed in the excerpt.
- b) Underline the words or expressions that indicate opinions or controversy.
- c) Discuss which side seems to have the strongest arguments. This is an excellent text for practising critical thinking.

The optional listening is an interview with Dr. Vanessa Auld, geneticist in the department of zoology at the University of British Columbia, who talks about the genetics of sleep cycles.

- d) Ask the students if any of their beliefs about sleep changed after the readings.
- e) For fun, have students complete **Handout 4-12**: "Guess How Much Sleep These Animals Need?" and discuss the answers as a class.

Language Features

Vocabulary

correlate

Idioms: morning person, night hawk

Structures

review second person and imperative verb form

Discourse Features

use of second person and imperative to give instructions
brochure format

use of questions for subheadings

words or expressions that indicate opinions or controversy

Student Learning Tasks

Read **Handout 4-10**: "Normal Sleep and Sleep Hygiene" and examine the brochure format.

Read **Handout 6**: Excerpt from "Missed ZZZs, More Disease?"

- a) Chart the evidence for the two points of view expressed. (I)
- b) Underline the words or expressions that indicate opinions or controversy. (I)
- c) Discuss which side seems to have the strongest arguments. (C)
- d) Discuss whether your beliefs about sleep have changed. (C)
- e) Complete **Handout 4-12**: "Guess How Much Sleep These Animals Need?" on the sleep needs of various animals (I) and discuss the answers (C).

Teacher Notes and References

Handout 4-10: "Normal Sleep and Sleep Hygiene"

Handout 4-11: Excerpt from "Missed ZZZs, More Disease?"



The readings could provide a springboard for discussion of cultural attitudes towards what constitutes "good sleep."

Optional Listening

CBC, *Quirks and Quarks*, Feb. 1, 2001

<www.cbc.ca/quirks/archives/00-01/feb1001.htm> (the radio text draws on vocabulary from earlier readings)

Handout 4-12: "Guess How Much Sleep These Animals Need?" (quiz and answer sheet for teachers)

Outcomes

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.4 Use the steps of the writing process...

SLO 6.1.4 Use functional planning...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.2.1 Use resourcing to access...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.11 Use transfer...

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 2.1 Show sufficient control over linguistic structures...

Instructional and Learning Sequence

Finish writing tasks as introduced earlier, using the process approach.

Roundup

Journal

If you could choose your own schedule during the school year, what time would you wake up, start school, and go to bed? What effect does your own school start time or any other factor have on your own well-being?

Learning Log

Record several ways that you can indicate your statements are opinion (even well-supported opinion) or that you may not be completely certain of the information.

Student Learning Tasks**Teacher Notes and References**

Complete writing tasks as introduced earlier, using the process approach. (I)

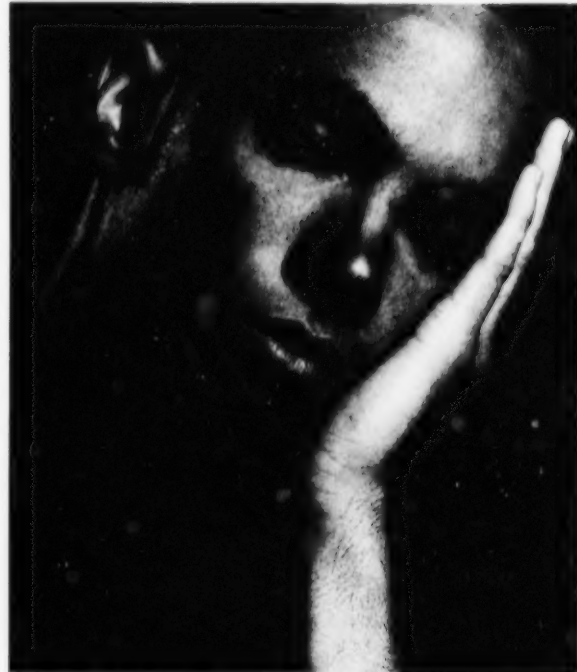
Write a journal entry answering the questions posed by the teacher. (I)

Record several ways that you can indicate your statements are opinion (even well-supported opinion). (I)



Sleep Quotations

1. "...to sleep, perchance to dream..."
—Shakespeare, *Hamlet*, Act III, Scene I
2. The best bridge between despair and hope is a good night's sleep.
—Anonymous
3. You know I can't sleep, I can't stop my brain
You know it's three weeks, I'm going insane.
You know I'd give you everything I've
got for a little peace of mind.
—Beatles, "I'm so Tired"
4. The woods are lovely dark and deep,
But I have promises to keep,
And miles to go before I sleep,
And miles to go before I sleep.
—Robert Frost
5. It is a common experience that a
problem difficult at night is resolved in
the morning after the committee of
sleep has worked on it.
—John Steinbeck
6. When action grows unprofitable,
gather information; when information
grows unprofitable, sleep.
—Ursula K. LeGuin
7. Sleep is better than medicine.
—Proverb
8. There is a time for many words, and there is also a time for sleep.
—Homer, (800 BC–700 BC), *The Odyssey*
9. To achieve the impossible dream, try going to sleep.
—Joan Klempner
10. [Sleep is] the golden chain that ties health and our bodies together.
—Thomas Dekker (1572 - 1632)
11. "I reached for sleep and drew it round me
like a blanket muffling pain and thought together
in the merciful dark."
—Mary Stewart
12. "Methought I heard a voice cry 'Sleep no more!
Macbeth does murder sleep,' the innocent sleep,
Sleep that knits up the ravell'd sleeve of care,
The death of each day's life, sore labour's bath,
Balm of hurt minds, great nature's second course,
Chief nourisher in life's feast."
—Shakespeare. *Macbeth* (2.2.46-51)

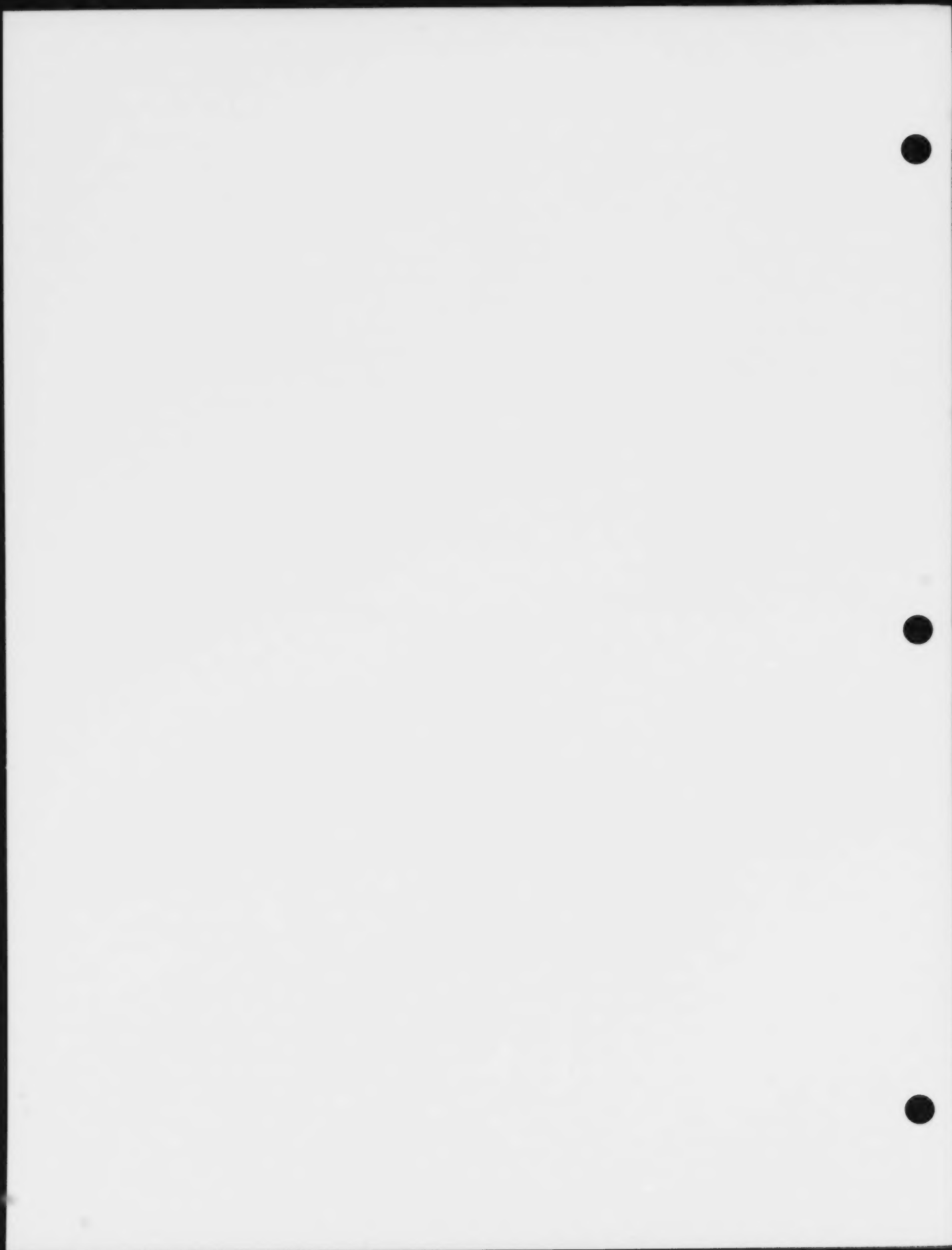




School Start Times



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Types of Sleep

Experts divide sleep into two basic categories based on the electrical activity in the brain. During rapid eye movement (REM) sleep, the pulses are short and fast. It is sometimes called paradoxical sleep because the brain seems to be as busy as when it's awake. Our most vivid dreams occur during REM sleep. Higher parts of the brain dedicated to decision making and some kinds of memory are quiet, while areas involved in emotion are active. REM sleep may be one way the brain processes the unruly emotional content of our lives.

Slow wave sleep (SWS) is characterized by relatively slow waves of electrical activity. Various restorative metabolic processes take place during this phase. Researchers have divided slow wave sleep into four stages defined by brain activity and ease of waking, with stages 3 and 4 being the deepest.

The quality of sleep changes with age. Starting at about age 65—some experts say it happens sooner—the brain struggles to get into the deeper stages (3 and 4) of slow wave sleep. At age 75, it may not be able to get into stage 4 at all. This may explain why older people are easily awakened by noise and don't feel well rested even after an apparently full night of sleep. REM also changes. Half of the sleep that infants and young children get is REM. In adults, REM plateaus at 20% to 25%.



Excerpt from "Sleep Well to Age Well." *Harvard Health Letter* 27.7 (May 2002).



Excerpt from The Consequences of Insufficient Sleep for Adolescents

by Ronald E. Dahl, M.D.

Links Between Sleep and Emotional Regulation

Any review of adolescent lifestyles in our society will reveal more than a dozen forces converging to push the sleep/arousal balance away from sleep and toward ever-higher arousal. What harm could there be in trying to push back a little toward valuing sleep? The potential benefits, according to Dr. Dahl, seem enormous.

Adolescents often "get by" with relatively little sleep, but it may be far less than they need. The observations of many parents, educators, and clinicians are in close agreement with a wealth of scientific data about the growing frequency of this worrisome pattern of behaviour. As discussed in other articles in this special section, there has been recent progress in understanding many of the factors that contribute to adolescent sleep loss, including the role of early school starting times and the role of various biological and social influences on adolescents' self-selected bedtimes.

The increasing evidence that teenagers seem to be getting less sleep leads inevitably to the pragmatic question "How much sleep do adolescents really need?" Unfortunately, the medical/scientific answer to this question seems tautological. Sufficient sleep is defined as "the amount necessary to permit optimal daytime functioning."

As impractical as that answer may appear, there are two important reasons for such a definition. First, sleep requirements can be remarkably different across individuals. Second, at a physiological level, sleep and waking states are closely intertwined aspects of a larger system of arousal regulation. (Sleep researchers often use the Chinese symbol of yin/yang to designate the interrelationship of sleep/wake states.)

At the centre of this discussion is a critical and pragmatic point: any evaluation of the sleep habits of adolescents must include a careful consideration of the waking consequences of sleep loss. The question becomes, in essence, "What are the daytime signs of diminished functioning that indicate insufficient sleep?" While there is a shortage of well-controlled research studies that seek to answer this question, this article focuses on the convergence of evidence suggesting that changes in mood and motivation are among the most important effects of sleep loss. Thus an important place to begin looking for evidence of insufficient sleep among adolescents is in the area of emotional or behavioural difficulties.

(continued)



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The Consequences of Insufficient Sleep for Adolescents (continued)

There is no shortage of epidemiological and clinical studies documenting recent increases in the rates of many psychiatric disorders among adolescents. Certainly many complex factors are likely to have contributed to the emotional and behavioural problems of teenagers, but the possible link to adolescent sleep patterns bears some scrutiny. There is clear evidence that sleep loss can lead to the development or exacerbation of behavioural and emotional problems. The key question is "How great is the contribution of sleep deprivation to these problems?" The magnitude of this link remains an open question that can only be answered through careful empirical research.

In the meantime, these issues have enormous ramifications for the fields of medicine and education with regard both to the physical and mental health of adolescents and to detriments to effective learning and social development. Many policy decisions will be influenced by our understanding and interpretation of the importance of sleep in these areas.

In this article I provide an overview of current scientific and clinical information regarding the consequences of insufficient sleep in adolescents. I pay particular attention to links between sleep and emotional regulation. The following is a brief outline of the main points to be presented:

1. **Sleepiness.** This is the most direct consequence of adolescent sleep loss, and it manifests itself most significantly in difficulty getting up on time for school and in falling asleep in school. These problems can further contribute to conflicts with parents and teachers and to poor self-esteem. Sleepiness is also associated with a strong tendency toward brief mental lapses (or micro-sleeps) that greatly increase the risk of motor vehicle and other kinds of accidents.
2. **Tiredness.** This is a symptom of sleep loss and includes changes in motivation—particularly difficulty initiating behaviours related to long-term or abstract goals and decreased persistence in working toward goals.
3. **Mood, attention, and behaviour.** Sleep loss can have negative effects on the control of mood, attention, and behaviour. Irritability, moodiness, and low tolerance for frustration are the most frequently described symptoms in sleep-deprived adolescents. However, in some situations, sleepy teenagers are more likely to appear silly, impulsive, or sad.
4. **Impact of emotional and behavioural problems.** Emotional arousal and distress can cause both difficulty falling asleep and sleep disruptions. Behavioural problems and family chaos can contribute to even later bedtimes and to sleep schedules that are ever more incompatible with school schedules.
5. **Bi-directional effects.** There are bi-directional effects between sleep and behavioural/emotional problems. It can be difficult at times to identify the causal links. For example, a depressed adolescent with severe sleep problems may be showing sleep disturbances that stem from depression or mood problems that stem from sleep disruption. Sleep loss can also contribute to a negative spiral or vicious cycle of deterioration. That is, sleep loss can have a negative effect on mood and behaviour, which leads to subsequent emotional/behavioural difficulties that further interfere with sleep. This produces a sequence of negative effects in both domains. In some clinical cases, such negative spirals appear to be a pathway to withdrawal from school or serious psychiatric problems.

Normal Sleep and Sleep Hygiene



earlier. This shift to an earlier sleep time is a normal pattern for older adults. Just as the teenager does not stay in bed later because they are lazy, the older adult does not go to bed earlier for lack of anything better to do with their time – the timing of when we sleep and when we wake is governed by our internal circadian clocks. If you find that you are sleeping less at night than you used to, yet your daytime functioning is not impaired, then there may be no cause for concern about these changing sleep patterns. If you are distressed by the fragmented nature of your sleep at night (and long bouts of wakefulness during the night specifically), it is not recommended that you compensate with naps.

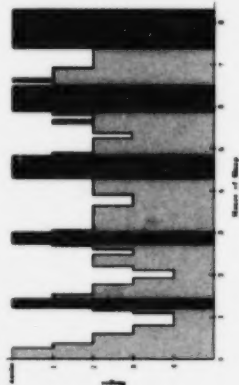
What about naps?

Daytime napping is natural for most toddlers. At about age 6 to 12 years, however, sleep begins to occur in a single nighttime episode. Napping behaviour is usually put aside until retirement age. Naps are generally only acceptable for people who have no difficulty falling asleep or staying asleep at night. Otherwise, the time you spend napping during the day may take away from your total sleep time at night. The optimal duration for a nap, whether during the daytime or while on the job for shift-workers, is 10-20 minutes. Twenty minutes is sufficient to feel rested, yet short enough not to interfere with nighttime sleep or your alertness on the job upon awakening. If you cannot get through the day without a long nap, despite also sleeping long hours at night, you should be evaluated for a sleep disorder.

Tip for a good night's sleep

1. *Make sleep a priority!* In today's busy world, too many people simply do not make the time for sleep. Are you allowing yourself enough time in bed to get the sleep you need? It is a good idea to keep track of how much sleep you are getting by keeping a "sleep diary." You can do this by making note of your lights-out and wake-up times each day, taking care to note any time out of bed during the night. Also keep track of

period is typically very brief, lasting less than 10 minutes, while the final episode may continue for more than an hour. This means that you get most of your REM sleep during the second half of the night. REM sleep is commonly associated with dreaming because your most vivid and bizarre dream reports occur during this stage of sleep, although dreaming or mental imagery takes place in all stages of sleep. The sleep/wake histogram below illustrates how a healthy, young adult would cycle through the stages of sleep on a typical night.

**Changes in sleep across the lifespan**

The timing and duration of sleep change dramatically as we age. A newborn baby may sleep as much as 16 hours per day! Adolescents will sleep 9 hours on average although they prefer to go to bed later and wake up later than the usual 11 to 7 bedtime. This shift to a later sleep time is a normal pattern for teens; however, their school schedules preclude this desired pattern and as a result many teens are chronically sleep deprived. Sleep in adults can be quite organized and efficient (meaning they sleep at regular clock times, fall asleep quickly, and have very little wakefulness during the night); however, lifestyle factors, behaviours, and poor sleep habits can grossly disrupt sleep in otherwise healthy adults. During later life, sleep becomes shorter in duration (about 6 hours on average); there is less time spent in deep sleep, arousals during the night are more frequent and for longer periods of time, and there is a tendency to nap during the day. Older adults prefer to go to bed earlier and wake up

How much sleep do you need?

Humans adapt to the 24-hour cycles of light and dark using their internal clocks (circadian rhythms). These clocks dictate that adults have one major episode of sleep at night typically lasting about 8 hours - ranging from 6 to 9 hours per night. Each person must determine his or her own sleep need. You can determine this ideal amount of sleep by simply paying attention to whether or not you feel rested in the morning and alert throughout the day. If no amount of sleep will make you feel rested on the next day, then you may want to seek medical advice, including being evaluated for a sleep disorder. People tend to sleep about 30 minutes longer on weekends, indicating that they may be accumulating a sleep debt during the week. It is important to understand that you cannot "catch up" on lost sleep, or store sleep for the future by getting more on weekends! This is because lost sleep on any given night has immediate consequences for the very next day (e.g., driving, work performance, memory and learning). Research indicates that sleep loss impairs your response time, motor ability, visual acuity, memory and attention.

What is a typical night's sleep?

The depth and character of sleep change in a predictable manner across the night. Healthy, young adults will fall asleep in 10-20 minutes after "lights out." Thereafter, the sleeper will cycle through 5 different stages of sleep in the course of the night. As you fall asleep, your thoughts begin to wander and your awareness of the outside world is reduced (this is called "stage 1"). As much as 50-60% of the night is spent in stage 2 sleep, a relatively light stage of sleep (i.e., easy to awaken from sleep). Stages 3 and 4, occurring predominantly in the first half of the night, are referred to as deep sleep since it requires a more meaningful or intense stimulus to awaken the sleeper (e.g., baby's cry or your own name). Together, stages 1 through 4 are referred to as non-REM sleep. REM sleep (or rapid eye-movement sleep) will occur approximately every 90 minutes throughout the night. You can thus expect to experience 4-5 REM sleep episodes per night. The first REM

(continued)



Normal Sleep and Sleep Hygiene (continued)

NORMAL SLEEP AND
SLEEP HYGIENE

CANADIAN SLEEP SOCIETY

2003

How to complete a sleep/wake and activity diary:
Each morning, make note of the time you went to bed and woke-up, taking care to mark any time out of bed during the night. Throughout the day, also keep track of the timing of your major meals, exercise and consumption of alcohol or caffeine. Keep track your habits for a 2-week period to gain some insight into your sleep/wake habits.

Activities key: M = meals, C = caffeine, A = alcohol, X = exercise, S = snack, T = toilet during night

Note: ↑ indicates bedtime and ↓ time out of bed, the solid lines represent time asleep

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Monday																								
Tuesday																								
Wednesday																								
Thursday																								
Friday																								
Saturday																								
Sunday																								

Prepared for the CSS by:

Kimberly Cole, PhD,

Department of Psychology, Brock University

the timing of your major meals, exercise and consumption of alcohol and caffeine. You may begin to see patterns emerge that will allow you to predict a good night versus a poor night of sleep. As a general rule, you should strive to keep a regular sleep/wake schedule. If you are experiencing difficulty sleeping at night, then a strict schedule becomes even more important. People suffering from insomnia should attempt to get out of bed at the same time each morning, even on weekends. An example of a sleep/wake diary is included in this brochure.

2. *Practice good sleep hygiene!* If you have trouble getting the sleep you need, work shifts, or simply cannot seem to find the time for sleep, then "sleep hygiene" is a practice that you need to work on more than others.

- Go to bed only when sleepy. Try a relaxing bedtime routine (e.g., soaking in a bath).
- Establish a good sleep environment with limited distractions (noise, light, temperature).
- Avoid foods, beverages, and medications that may contain stimulants.
- Avoid alcohol and nicotine before going to sleep.
- Consume less or no caffeine.
- Exercise regularly, but do so around midday or early afternoon. Over-training or exercising too much is not advisable.
- Try behavioural/relaxation techniques to assist with physical and mental relaxation.
- Avoid naps in late afternoon and evening.
- Avoid heavy meals close to bedtime.
- Avoid fluids before going to sleep.
- Use the bed only for sleep and intimacy (do not eat, read or watch TV in bed!).
- Establish a regular waketime schedule.

Excerpt from "Missed ZZZs, More Disease?"

The first part of the article describes research studies that connect insufficient sleep to a number of chronic illnesses. Then it acknowledges the other side...

Virtue or Indulgence?

Some scientists remain skeptical that sleeping 8 hours should be the next great health virtue. They say that getting from the current evidence to a firm link between sleep loss and disease requires a giant leap of faith.

"Some people don't have time to sleep, or they'd rather watch television. Should we condemn them before the evidence is in?" asks Daniel F. Kripke of the University of California, San Diego. Kripke argues that telling people that they'll get sick if they don't sleep enough may, ironically, worry them into insomnia.

Kripke and his colleagues published results in February that, on the surface, contradict the idea that more sleep is good for you. During a large epidemiological study lasting 6 years, people were more likely to die if they initially reported sleeping 7.5 hours or more a night than if they reported sleeping 5.5 to 7.5 hours a night. The researchers took into account such factors as age, weight, diagnosed illness, and medication use.

The amount that the average person in the United States sleeps per night, about 7 hours, is consistent with good health, Kripke concludes. "People who are saying you should sleep more don't have the evidence," he adds.

Anything more than 7 hours is optional sleep, which can be taken for relaxation and indulgence but is not necessary for good health, agrees sleep scientist Jim A. Horne of Loughborough University in England.

Vgontzas disagrees. Underlying depression and sickness probably explain the apparent association between sleeping 8 or more hours and increased mortality in Kripke's study, he says.

However, neither Horne nor Kripke is swayed by the studies that show physiological changes in sleep-deprived subjects in the lab. The changes are probably real, they agree, but may not be meaningful—either because they're not severe enough to cause long-term health effects or because they're artifacts of the experimental situation.

The immune system probably does crank up and go on red alert when a person is awake longer, Horne explains. After all, a body is more likely to come across pathogens when it's up and about. But there's no evidence that this activity undermines health, he says.

The argument that people are evolutionally programmed to sleep 8 or 9 hours a night doesn't hold up, at least in European history, Horne adds. Hundreds of years ago, people worked 14- or 15-hour days and were lucky to get 6 hours of sleep at night, he says. Moreover, their sleep patterns were different than those of modern slumberers. In England, people went to bed an hour after sundown, got up a few hours later for a midnight meal, and then slept a few more hours until sunup, Horne says. People are probably designed to sleep 6 or 7 hours at night and take a short afternoon nap, he suggests.

(continued)

Source: <www.sciencenews.org>.

Excerpt from "Missed ZZZs, More Disease?" (continued)

Bleary Picture

Research on sleep deprivation and health is still in its infancy, Van Cauter admits. Nevertheless, she maintains that 8 or more hours of sleep a night is optimal.

"To suggest to people that you can maintain average sleep time of 6 hours and get on the road and drive your truck is criminal," she asserts. It's too early to say whether sleep loss causes disease, but sleeping certainly hinders performance and diminishes safety, she says.

There's no reason to believe that sleeping more than 8 hours could be harmful or that insomnia could be good for you, Vgontzas adds.

"My general appraisal of the literature is, in terms of more or less normal variations in sleep amount and effects on health, we really don't know," reflects sleep specialist Alan Rechtschaffen of the University of Chicago. There's a consensus that the extreme—below 6 hours a night—isn't advisable, he says. Beyond that, distinguishing the health effects, if any, of 6 versus 7 versus 8 hours of sleep is going to take large, well-controlled studies that follow people over long periods. Optimal sleep also probably varies with age and gender, says Vgontzas.

So, as to whether millions of cases of obesity, diabetes, and cardiovascular disease could be prevented if people in the United States were simply to increase their sleep from 7 to 8 hours a night, the issue hasn't been put to bed. But the early data are at least provocative.

"We have all the dots or a lot of the

dots, and it looks like there's a picture there, but the science that actually connects those dots hasn't been done yet," Dinges says.



Guess How Much Sleep These Animals Need?

Choose one of the following animals for each blank below:

dogs	pythons	human	tigers
giraffes	cats	children	cows
brown bats	horses	African elephants	

If you don't know, don't worry. Just make a guess!

- 1) _____ sleep 12 or more hours every 24 hours. They sleep mostly at night, but also during the day.
- 2) _____ may be big, but they sleep only 3 hours every 24 hours.
- 3) Lucky for us humans, slimy _____ sleep 15 to 20 hours and _____ sleep 16 hours every 24 hours.
- 4) _____ and _____ sleep only 4 hours every 24 hours because they need more time to eat.
- 5) _____ need at least 9 hours of sleep every 24 hours!
- 6) When they aren't eating insects, _____ sleep nearly 20 out of 24 hours every day.
- 7) _____ don't need pillows, because they sleep less than 2 hours each day standing up!
- 8) Some types of _____ sleep more than others, usually 10 hours every 24 hours.



(see over for answers)

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<www.nhlbi.nih.gov/health/public/sleep/starslp/teachers/quiz.htm>. Reproduced by permission.

Guess How Much Sleep These Animals Need?—Answers

- 1) **Cats** sleep 12 or more hours every day. They sleep mostly at night, but also during the day.
- 2) **African elephants** may be big, but they sleep only 3 hours a day. They need the rest of the day to consume large amounts of food.
- 3) Lucky for us humans, slimy **pythons** sleep about 15 hours (if they are hungry) or as many as 20 hours after feeding. **Tigers** sleep 16 hours a day. Both animals conserve precious energy for hunting.
- 4) **Horses** and **cows** sleep only 4 hours each day because they need more time to eat. Like elephants, horses and cows need plenty of time to eat and digest enough food.
- 5) **Human children** should sleep at least 9 hours each day! This is an important point to emphasize with your students.
- 6) When they aren't eating insects, **brown bats** sleep nearly 20 hours each day. As with pythons and tigers, bats need to conserve energy for hunting.
- 7) **Giraffes** don't need pillows, because they sleep less than 2 hours each day standing up! Giraffes sleep in short bursts. Some scientists speculate that they "semi-sleep" while they are eating as well—a form of "zoning out."
- 8) Some types of **dogs** sleep more than others, but most sleep around 10 hours a day. Some, however, sleep as many as 14 hours a day.



Topic 4
**When
East Meets West:
Alternative
Medicines:**
Investigating Herbal
Medicines

(3–4 lessons, including
presentations)

This lesson will focus on a discussion of alternative medicine that eventually focuses on herbal medicines. Students will do research on a specific herbal remedy, design an experiment to test its effectiveness, and present it to the class. Students will also develop rubrics to judge each other's experiments. Some

related academic tasks are: skimming, scanning, comparing and contrasting, making an oral presentation, conducting and referring to research, participating in a discussion, understanding explicitly stated information, extracting salient points, reading critically, evaluating a text, and expressing purpose, meaning, and method.

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 1.4 Show an awareness of organizational patterns...

SLO 4.2 Communicate effectively to work with others...

SLO 6.1.3 Use directed attention...

SLO 6.1.5 Use selective attention...

SLO 6.2.7 Use elaboration...

Instructional and Learning Sequence

Sequence 1

Activation

Introduce the idea of conventional and alternative medicines.

- a) Ask students how they would define the term "alternative medicine." As students contribute their ideas, write them on the board. Encourage students to use definition patterns learned in previous lessons.

Next, have students open up the Internet resource "Alternative Medicine" and scroll down to the subheading "But exactly what is alternative medicine?"

- b) Have them compare their definitions with the information given there.
- c) Then, using paraphrasing, students rewrite the five points used in defining alternative medicine presented in the article. Pair students and have them read each other's paraphrases and comment on them. (The teacher may take these in to mark.)
- d) Finally, have students brainstorm to create a list of the types of alternative medicine they know about. Record this list on the board.

Language Features

Vocabulary

names of types of alternative medicine

Discourse Features

definitions patterns (review)

technique of paraphrasing (review)

Academic Language Functions

defining

comparing

classifying

Student Learning Tasks

- a) Define the term "alternative medicine" using previously learned definition patterns. (C)

- b) Compare your definition with the information given in the Internet Resource under the heading "But what is alternative medicine?" (I)
- c) Using paraphrasing, rewrite the five points used in defining alternative medicine presented in the article. Have a partner read and comment on your paraphrasing. (I) (S)
- d) Brainstorm a list of types of alternative medicine. (C)

Teacher Notes and References**Internet Resource:**

"Alternative Medicine" at:

<[www.alt-med-ed.com/](http://www.alt-med-ed.com/aboutus/background.htm)

[aboutus/background.htm](http://www.alt-med-ed.com/aboutus/background.htm)>



The focus in the lesson will be herbal remedies, but encourage students to list all kinds of alternative medicine.

Outcomes

SLO 5.4 Show understanding of the effect of cultural background...

SLO 6.1.3 Use directed attention...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.7 Use elaboration...

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 6.1.5 Use selective attention...

SLO 6.2.4 Use note taking...

SLO 6.2.12 Use inferencing to guess the meanings...

Instructional and Learning Sequence

Step 1

Students focus on herbal medicine. Ask: Is the attitude toward the use of herbal medicines different in eastern and western cultures? Why? Discuss as a class.

Ask: Is the attitude toward conventional Western-style medicine different in Eastern and Western cultures? Why?

Discuss as a class.

Step 2

Distribute **Handout 4-13: "Survey: Personal Experience with Herbal Remedies,"** a survey about personal experience with herbal remedies. Have students fill it out.

As a class, look at the results of the survey. Ask students for their responses and record the totals on a master copy on the overhead or on the board. Students should briefly share why they answered as they did. Leave the survey and results on the board for later use.

Language Features

Vocabulary

immune system, conventional medications, viable, medical practice, herbal supplements

Discourse Features

discussion expressions (review)

Academic Language Functions

explaining, describing, comparing, contrasting

Step 3

Provide students with **Handout 4-14: "Americans Gamble on Herbs as Medicine."**

- Have students skim the whole article.
- Next, have them scan the first 13 paragraphs to answer the language questions (1-5) and the content questions (1-9) in **Handout 4-15: "Focus Questions: 'Americans Gamble on Herbs as Medicine'"**
- As a class, discuss the answers. Record the answers in point form on the board.

Note: Language questions based on the article contain the other language features of the lesson.

Language Features

Vocabulary

as required from the article

Structures

Students should note the imperative verb forms in bold used in the questions and instructions in Handout 3.

Student Learning Tasks

Discuss attitudes toward herbal medicine in Eastern and Western cultures. (C)

Complete **Handout 4-13**: "Survey: Personal Experience with Herbal Remedies." (I)

As a class, look at the results of the survey and share why you answered as you did. (C)

- a) Skim **Handout 4-14**: "Americans Gamble on Herbs as Medicine." (I)
- b) Scan the first 13 paragraphs to answer the focus questions in **Handout 4-15**: "Focus Questions: 'Americans Gamble on Herbs as Medicine'." (I)
- c) Discuss the answers as a class. (C)

Teacher Notes and References

You can also ask the students to comment on changing attitudes toward medical treatment in various cultures.

Handout 4-13: "Survey: Personal Experience with Herbal Remedies"



Handout 4-14: "Americans Gamble on Herbs as Medicine"

Handout 4-15: "Focus Questions: 'Americans Gamble on Herbs as Medicine'"

Outcomes

SLO 3.1 Seek, organize, and synthesize information...

SLO 3.2 Develop and implement a plan for researching...

SLO 4.2 Communicate effectively to work with others...

SLO 6.1.2 Use organizational planning...

SLO 6.1.5 Use selective attention...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.1 Use resourcing to access...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.7 Use elaboration...

Instructional and Learning Sequence

Step 4

Give students a list of common herbs and plants to be researched in pairs. Remind them to look for reliable print and Internet sources as they do their research. (See the Internet resource link on antibacterial spices.) There are many reliable sources of information on the Internet. Pair students and have each pair try to find one reliable source of information to share with the class. See Module 1, Topic 4 for resources on how to evaluate websites.

As a guide in doing their research, students should address the following points:

- background information
- uses for/effects of the herb
- problems/dangers associated with the herb
- evidence that it is effective
- include a picture of the herb in its natural form

Remind students to take point-form notes in their own words.

After completing their research, students will design a scientifically valid experiment to test the effectiveness of their herbal remedy. (They will not necessarily conduct these experiments, unless the teacher chooses to add this to the lesson.) Following the guidelines given in **Handout 4-16: "Designing an Experiment: Research and Presentation of a Scientifically Valid Study to Test the Effectiveness of an Herbal Remedy,"** students will use the following headings: title, background information, materials, hypothesis, and procedures. These experiments will be presented to the class. Students can use a poster presentation or *PowerPoint*.

Language Features

Structures

Discuss verb tenses needed to write the experiment (present tense for scientific truths, past simple for history/background, imperative for procedures, etc.).

Discourse Features

point-form notes
format of an experiment

Academic Language Functions

explaining, describing, informing, analyzing

Student Learning Tasks**Assignment**

With a partner, research a common herb addressing the five-point criteria. Share results with the class. (B) (C)

Develop a scientifically valid experiment designed to prove the hypothesis following the guidelines given in

Handout 4-16: "Designing an Experiment: Research and Presentation of a Scientifically Valid Study to Test the Effectiveness of an Herbal Remedy." (B)

Present experiments to the class as poster presentation or *PowerPoint*. (B) (C)

Teacher Notes and References

Internet Resource: List of Top Antibacterial Spices

<www.carleton.ca/jmc/cnews/30031998/chart.html>

Handout 4-16: "Designing an Experiment: Research and Presentation of a Scientifically Valid Study to Test the Effectiveness of an Herbal Remedy"



Students should look at Western and Eastern herbs and plants.

Here are some suggestions:

echinacea, ginseng, goldenseal, St. John's wort, kava root, ginkgo biloba, saw palmetto, kyolic, ma huang, sassafras, valerian root, cat's claw, foxglove, wormwood, chapparal, comfrey, willow-bark, clove, dandelion root. (There are many others you may want to include.)

Outcomes

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 2.2 Use several visual techniques...

SLO 2.3.2 Demonstrate increasing awareness of... rhetorical forms...

SLO 2.3.3 Produce effective oral presentations.

SLO 4.6 Respond to and critique a variety of individual perspectives...

SLO 5.7 Select and present ideas...keeping in mind the intended audience.

SLO 6.2.7 Use elaboration...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence**Evaluation**

The class will design a set of rubrics they feel will help them fairly evaluate the experiments. (They can meet in groups of four to brainstorm and then write up their rubrics.)

Groups share their results with the class; students must come to a consensus on the best set or combination of sets of rubrics.

Students will present their experiments to their classmates. They will have the experiment recorded in proper written form and will discuss it orally with the class. Each group member should take an equal load. The class will comment and ask questions. Teachers will evaluate these experiments, as well as the presentation given by each group.

Note: At this point, students may take the initial survey again and compare the totals from the first survey to the totals this time. Have opinions changed now that students are more knowledgeable?

Language Features**Vocabulary**

dependent on rubrics

Discourse Features

format of rubrics

Academic Language Functions

classifying, evaluating, justifying and persuading, explaining

Student Learning Tasks

In groups of four, brainstorm and then write up a rubrics to be used to evaluate the experiments written up previously. (B)

Groups share their rubrics with the class and reach consensus on the best set or combination of sets of rubrics. (B) (C)

Present your experiment to the class and answer questions from classmates. (B) (C)

Teacher Notes and References

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 2.1.1 Analyze and edit texts...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.3.1 Use the structures and language features...

Instructional and Learning Sequence**Roundup**

Ask students to respond to the following question: What do you feel is the most responsible way to treat ailments: conventional medicine, alternative medicine, or a combination of both?

OR

Write a personal journal entry about your own experience with any form of alternative medicine, especially one that is non-herbal (e.g., acupuncture).

Language Features**Discourse Features**

discourse markers to express opinion (review)

Academic Language Functions

evaluate, justify

Student Learning Tasks**Teacher Notes and References**

What do you feel is the most responsible way to treat ailments: conventional medicine, alternative medicine, or a combination of both? (I)

OR

Write a personal journal entry about your own experience with any form of alternative medicine. (I)



Survey: Personal Experience with Herbal Remedies

Answer the following questions:

1. Have you ever taken an herbal remedy? Yes___ No___
(If no, skip to question 3.)
2. Mark with a tick each of the following health problems that have caused you to try an herbal remedy:

sleeplessness	_____
lack of energy	_____
headache	_____
cold	_____
stomach ache	_____
allergies	_____
depression	_____
forgetfulness	_____
weight loss	_____
weight gain	_____
beauty aids*	_____ (*makeup, hair products, deodorants)
building immune system	_____
building muscle	_____
skin disorders	_____
aches and pains	_____
other*	_____ (*describe)
3. Do you take conventional medications on a regular basis? Yes___ No___
4. With which of the following statements do you most agree? Place a tick beside each.

___ Herbal medicine is an ancient, worthless practice that has no basis in science.
___ Herbal medicine may work for some, but I prefer to take conventional medicines.
___ Herbal medicine may be a viable medical practice, but I need more information to justify its use.
___ Herbal remedies are as reliable a medical practice as conventional medicines.
___ Herbal medicine is a better way to treat many illnesses than is conventional medicine.
___ I would be confident in taking a combination of herbal and conventional medicines.
___ I believe in prescriptive rather than preventative medicine.
___ I do not believe in taking any kind of medicine.
5. Are herbal supplements as closely regulated as other drugs? Yes___ No___
6. Do you believe that herbal supplements are safe? Always___ Sometimes___ Never___

Source: <[www.nytimes.com/learning/teachers/lessons/19990209tuesday.html?searchpv= learning_lessons](http://www.nytimes.com/learning/teachers/lessons/19990209tuesday.html?searchpv=learning_lessons)>.



Americans Gamble on Herbs as Medicine

by Jane E. Brody

Herbal medicine, the mainstay of therapeutics for centuries before modern purified drugs relegated it to the status of near-quackery, has in the last five years emerged from the fringes of health care with an astonishing flourish and now shows clear signs of joining the medical mainstream.

Despite many cautionary tales about adulterated and even dangerous products, herbs formulated as capsules, tinctures, extracts and teas—and increasingly as additions to common foods like potato chips and fruit drinks—are now routinely used by a third of

American adults seeking to enhance their health or alleviate their illnesses. Each day the herbal realm wins new converts, particularly among those who have become disillusioned with the cost and consequences of traditional drugs, distrustful of conventional physicians and convinced that “natural” equals “good.”

Yet, because herbal products are classified as dietary supplements, not drugs, and face none of the premarket hurdles drugs must clear, consumers have no assurance of safety or effectiveness. Indeed, scores of products sold in the United States are listed by European and American authorities as ineffective, unsafe or both, and manufacturing standards to assure high quality have been proposed but are not yet in force.

Thus, countless consumers are wasting their money on useless products or jeopardizing their health on hazardous ones. Among the serious side effects that have been linked to herbal remedies are high blood pressure, life-threatening allergic reactions, heart rhythm abnormalities, mania, kidney failure and liver damage. A few widely available products, including saffron and comfrey, contain known carcinogens.

At the same time, according to a report last year in the journal *Psychosomatics*, unsuspecting

consumers “have used herbal remedies with good results only to discover that the benefit was actually derived from the presence of undisclosed medicines,” including steroids, anti-inflammatory agents, sedatives and hormones.

“The lack of quality standards is the No. 1 problem in the whole industry,” said Dr. Varro Tyler, emeritus professor of pharmacognosy (the study of active ingredients in plants) at Purdue University. Tyler, who has no financial connection to herbal products and is arguably the nation’s leading independent expert on herbal medicine, said: “I feel sorry for the typical consumer. How is

he or she to know what is best, what products are reliable and safe? Even when a label says the product has been standardized, the consumer has no way to know if it actually meets that standard.” And even if an herbal product has been reliably made in some standard dose, it does not mean that scientific studies have shown it to be effective.



The industry itself is promoting a “good manufacturing practices” doctrine. Annette Dickinson, director of scientific and regulatory affairs for the Council for Responsible Nutrition, a trade organization for producers of dietary supplements, said a consortium of associations submitted a document of manufacturing standards to the Food and Drug Administration two years ago. Although such a standard would say nothing about an herb’s safety or effectiveness, it would result in reliable methods that the industry would have to use to assure the identity and quality of its products. The agency has issued a notice of proposed rules but no final ruling as yet.

Nonetheless, botanicals—as herbal products are more accurately known—are enjoying an annual retail market approaching \$4 billion, up from \$839 million in 1991 and growing about 18 percent a year. Hundreds of products formulated with virtually no government oversight are crowding shelves of health food stores, food markets and pharmacies nationwide. Supplements are also

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Source: <www.nytimes.com/learning/teachers/featured_articles/19990209tuesday.html>.

Americans Gamble on Herbs as Medicine (continued)

widely sold by marketers like Amway, through catalogs and on the Internet.

Now, even major pharmaceutical companies like Warner Lambert, American Home Products, Bayer and SmithKline Beecham are introducing herbal products, adding respectability to this marginalized market.

Some herbs—like echinacea, goldenseal, American ginseng and wild yam—have become so popular that their continued supply from natural sources is in danger. As the plants become scarcer and more expensive, products containing them are increasingly likely to be adulterated and may even contain none of the herb listed on the label. Peggy Brevoort, president of East Earth Herb Inc., a company in Eugene, Ore., that produces botanicals, said the demand for St. John's wort, used for mild depression, and kava, a calnative said to reduce anxiety, now exceeds their supply, introducing the "danger of adulteration" by "unscrupulous dealers."

At the same time, two major new publications—a 1,244-page *Physicians' Desk Reference for Herbal Medicines*, produced by the same company that publishes the *Physicians' Desk Reference*, and an English-language edition of Germany's therapeutic guide to herbal medicines, *The Complete German Commission E Monographs*—have been issued to help educate physicians, pharmacists and interested consumers about the known uses, proper dosages and safety concerns of more than 600 botanicals now sold in this country. The evaluations in both books are based on studies, most done in Germany and reviewed by teams of experts.

Last month, the National Institutes of Health began listing on the Internet international bibliographic information on dietary supplements, including herbal products. The address is www.nal.usda.gov/fnic/IBIDS/.

In addition, a few medical and pharmacology schools have recently introduced courses in phytomedicine, the study of botanicals. And next month the American Pharmaceutical Association will conduct a two-day program on herbal medicine as part of its annual meeting. Still, most

doctors remain wary of botanicals, especially when patients choose self-medication with plant extracts over established medical remedies.

The very act of Congress that has fostered this growth—the 1994 Dietary Supplement Health and Education Act—has also permitted chaos to reign in the botanical marketplace, with no mechanism to assure that products are safe or effective. Pushed heavily by Republican Senator Orrin Hatch of Utah, the home base of many supplement makers, and passed over the objections of the FDA, the law created a new product class, the dietary supplement, that was not subject to regulations applied to drugs. Now any substance that can be found in foods, regardless of amount or action and including substances that act as hormones or toxins, can be produced and sold without any premarket testing or agency approval.

Marketed as neither a food nor a drug, herbal products are not obliged to meet any established standards of effectiveness or safety for medicinal products, which require extensive laboratory and clinical trials before approval. As with other substances classified as dietary supplements, the FDA can restrict the sale of an herbal product only if it receives well-documented reports of health problems associated with it. The agency took four years, and more than 100 reports of life-threatening symptoms and 38 deaths, to act against ephedra, often sold as the Chinese herb ma huang, a stimulant that can prove disastrous to people with heart problems.

With FDA authority limited by the 1994 law, the Federal Trade Commission, which monitors advertising, has taken a more active role in monitoring supplement makers.

The FTC last year took legal action against seven manufacturers that had broken rules requiring advertising be truthful and verifiable. The companies were selling remedies or purported cure-alls for ailments like impotence, cancer and obesity.

The commission also sent e-mail warnings to 1,200 Internet sites that it said had made "incredible claims" for drugs, devices and supplements, including herbal remedies that would

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Americans Gamble on Herbs as Medicine (continued)

supposedly ward off AIDS. Also, the commission late last year issued its first set of advertising guidelines aimed specifically at the supplement industry.

Still, the current regulations have created a quagmire of consumer confusion and set up potential health crises that even industry officials say could ultimately hurt producers as well as users of herbal products. Under the 1994 law, consumers have no assurance that an herbal product contains what the label says it does or that it is free from harmful contaminants. Independent analyses of some products, particularly those containing costly or scarce herbs, revealed that some have little or none of the purported active ingredient listed on the label.

Adding to the confusion is that botanical makers are allowed to describe products only in terms of their effects on the structure or function of the body, not their potential health benefits. Thus, a product label might say "promotes cardiac function" but it cannot say "lowers cholesterol."

Likewise, although the law does allow health warnings on the label, most manufacturers have yet to include them.

Consumers are warned, however, that federal drug safety officials are not watching the store. All botanicals must display a disclaimer on the label following the description of the product's structural or functional role: "This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease." To which Tyler commented, "If that is true, why on earth would anyone use it?"

The seeds of the modern herbal market were sown in the '60s when "green, organic and natural became buzzwords," Tyler said. But they did not mature until the '90s with the growing consumer interest in "self-care and controlling one's destiny," he said. Many turned to herbs as a gentler way to treat health problems and a potential tool for preserving mental and physical health.

The interest has spawned scores of Internet sites and hundreds of books on various herbs. But

much of the literature is replete with poorly documented health claims and, with few exceptions (among them, Tyler's books), advocacy prevails over objectivity.

Because plants contain a mixture of relatively diluted chemicals, they naturally tend to have milder actions, both in their therapeutic benefits and side effects, than the concentrated, single chemicals in most drugs. Thus, botanicals generally take longer to act than regular pharmaceuticals and few have the potency of a prescription, the one possible exception being saw palmetto, which a well-designed study indicated may be as helpful for an enlarged prostate as the more expensive and riskier drug, Proscar®.

The combination of chemicals in botanicals is potentially both a plus and a minus. When two or more chemicals enhance one another's activity, the therapeutic benefit could theoretically exceed that of an isolated substance formulated as a drug. Mark Blumenthal, who heads the American Botanical Council, noted that the herb St. John's wort, widely used in Germany and increasingly in the United States to counter mild depression, is standardized for a substance called hypericin. But, he explained, "hypericin is not directly linked to its antidepressant activity." Rather, other substances in the herb seem to have diverse actions on brain chemicals, all of which work together to counter depression.

Equally possible, though, when using an herb with two or more active chemicals, is that one will cancel the benefits of another or introduce a hazard. Without careful chemical tests and large, well-controlled clinical trials such actions are often hard to detect.

Consumer confidence in herbal medicine is bolstered by the common but erroneous assumption that "natural" equals "safe" and the public's failure to realize that many plants contain chemicals that are potent drugs or outright poisons. Natural laxatives like the herb Cascara sagrada are just as habit-forming and harmful to the colon as laxatives sold as drugs.

Indeed, one quarter of prescription drugs and hundreds of over-the-counter products were

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Americans Gamble on Herbs as Medicine (continued)

originally isolated from plants. Ephedra, for example, contains a natural stimulant that is approved for use as a decongestant and bronchial dilator in some pharmaceutical products. However, when used in uncontrolled dosages or by people with certain underlying health problems, it can cause a dangerous rise in blood pressure and, in its herbal form, has been responsible for serious adverse reactions and dozens of deaths, mainly among people who inappropriately used it as a stimulant or diet aid.

Complicating the safety issue is the fact, shown in several recent surveys, that most patients fail to tell their physicians they use herbal supplements and thus sometimes risk dangerous drug interactions or endure costly tests or treatments when an herb causes an unrecognized side effect. Experts say many patients withhold information about herbal drug use because they fear being ridiculed by their doctors.

Although all German physicians must take courses on herbal remedies, only a handful of American medical and pharmacology schools offer courses in this field.

A year ago, the President's Commission on Dietary Supplement Labels recommended that the FDA appoint a committee to evaluate the safety and effectiveness of herbal products. "This could be the most important step in the United States toward legitimizing herbal medicine," Tyler said.

However, the agency responded that it lacked the budget to support such an effort. American physicians have completed and published only a few well-designed studies of some popular botanicals. Among them were studies showing that saw palmetto can shrink an enlarged prostate and ginkgo biloba can improve memory in patients with early Alzheimer's disease.

The Office of Dietary Supplements at the National Institutes of Health is helping to finance a three-year multicenter study of St. John's wort as a treatment for clinical depression and a study of plant-based estrogens as a preventive for postmenopausal health problems.

However, thousands of studies of botanicals have

been completed abroad—mainly in Germany—that strongly suggest a health-promoting role for more than 200 plant products. Germany's Commission E evaluated 380 botanicals, approving 254 as safe and reasonably effective and disapproving 126 as ineffective, unsafe or both.

The Germans use a different criterion to assess an herb's benefits—a doctrine of "reasonable certainty" that the herb has the desired effect and is safe, Blumenthal said. Whereas standard testing of a drug for approval by the FDA can cost as much as \$500 million per product—a prohibitive amount for companies to spend on botanicals that cannot be patented—tests to establish "reasonable certainty" would cost only \$1 million to \$2 million, Tyler estimated.

In June 1996, Dr. Robert Temple, director of medical policy for the FDA's Center for Drug Evaluation, suggested that, rather than subjecting botanicals to the extensive tests required for drugs, the agency might consider applying less stringent criteria to assess an herb's effects, at least when a product is to be used only for a short time. He said, "A long history of safe use might provide sufficient safety information for products that are intended for short-term use."

More than four dozen botanicals or botanical formulations have been submitted to the agency as investigational new drugs. If any meet the agency's criteria for safety and effectiveness and are eventually approved as drugs, they would be allowed to carry direct health claims—instead of just structure and function statements—on labels and in advertising.

Meanwhile, Dr. Joerg Gruenwald, medical director of a German phytomedicine company and primary editor of the new *Physicians' Desk Reference for Herbal Medicines*, said professionals can rely on that volume for current, documented information about botanicals. The volume, to be issued annually, updates the Commission E reports and adds several hundred other products sold in the United States, listing effects, side effects and conditions in which their use is inadvisable.

Focus Questions: "Americans Gamble on Herbs as Medicine"

Answer the following questions sentences by reading the first thirteen paragraphs of the article.

I. Language:

Read the title. What does it tell you about the topic of the article that follows? What does the use of the word "gamble" suggest about the use of herbs as medicine?

1. **Look** in the first paragraph for the term "near-quackery." Can you determine what it means by using context clues?
2. **Find** the definition for the literary term "metaphor." Can you find a metaphor in paragraph three? **Explain** the metaphor and **show how** it is effective in describing the testing of new products.
3. In paragraph three, the word "effective" has been changed by adding a prefix in one sentence and a suffix in another. **Explain** the purpose of using the prefix and suffix.
4. **Find** at least three examples of introductory words or phrases. How are they used? What punctuation mark always follows these words and phrases? Why?
5. **Find** two definition patterns that we have used in previous lessons.

II. Content:

1. **Explain** what the increasing use of herbal medicines over traditional ones states about society as a whole.
2. **Suggest why** a person might choose to use an herbal medicine over a conventional Western-type treatment.
3. **Explain** why herbal products are not as highly regulated as drugs and how this might affect consumers.
4. **Discuss** the significance of the report in the journal *Psychosomatics* that states that "unsuspecting consumers 'have used herbal remedies with good results only to discover that the benefit was actually derived from the presence of undisclosed medicines,' including steroids, anti-inflammatory agents, sedatives, and hormones."
5. **Explain** why Dr. Varro E. Tyler feels that "the lack of quality standards is the No. 1 problem in the whole [herbal supplement] industry."
6. **Describe** how Annette Dickinson supports the "good manufacturing practices" doctrine regarding the use of herbs for medicinal purposes.
7. Herbal products are not closely regulated, yet consumers are buying them at an increasing rate. **Speculate** why this is occurring.
8. The natural supplies of some herbs are becoming endangered due to the popularity of herbal supplements and herbal medicine. **Suggest how** this is happening and predict the impact it may have on the future of the industry and on the earth.
9. **Describe** what informational goods and services are available about herbs and their uses. **Explain** what they may do to forward the trend in herbal supplements. (Students: Note the part of speech of "forward" in this question.)

Adapted from website questions at <www.nytimes.com/learning/teachers/lessons/19990209tuesday.html?searchpv=learning_lessons>.



Designing an Experiment: Research and Presentation of a Scientifically Valid Study to Test the Effectiveness of an Herbal Remedy

In doing your research:

1. Choose an herbal remedy.
2. **Observations and description:** Find reliable sources that will help you answer the following questions:

- **Explain** the history behind the use of this herb.
- **List** the ailments this remedy is supposed to prevent, relieve, or cure. If there is more than one, choose an ailment on which to focus your research.
- **Describe** the symptoms commonly associated with this ailment.
- **Describe** the suggested results of taking this remedy.
- **Discuss** the anecdotal evidence that exists showing that this remedy is effective.
- **Document** the warnings/problems that are associated with this herbal remedy.
- **List** any conflicting claims about the success of using this herbal remedy.
- **Find** a picture of the herb in plant form. Where is this herb found?

(This information will be used as the "Background Information" section of your written experiment.)

3. **Hypothesis:** Think and note:

- **Consider** the anecdotal information gathered. **Explain** some of the possible causes for it.
- Of these possibilities, **choose** the one you think is most reasonable. **Decide** which possibility you would like to test.
- Based on the research and observations made previously, formulate a **hypothesis** about the herbal remedy. **(This will be the "Hypothesis" section of your written experiment.)**
- **Create** a clear, concise **title** for your experiment.
- **Write out** a statement of purpose that describes what you intend to try and prove. **(This will be the "Purpose" section of your written experiment.)**

4. **Experiment:**

- **Design** a double-blind experiment. This is an experiment in which neither the test subjects nor those dispensing the remedy know what materials they are dispensing or receiving.
- **Write** the step-by-step directions, noting each step's purpose. **(This information will form the "Procedures" section of your written experiment.)**

(continued)

Adapted from "Medicine Show." <www.nytimes.com/learning/teachers/lessons/20021217tuesday.com>.

Designing an Experiment: Research and Presentation of a Scientifically Valid Study to Test the Effectiveness of an Herbal Remedy (continued)

- **Consider the following:**
 - Besides being affected by the remedy, how else might your subjects get well?
 - Based on these answers, what variables should be controlled?
 - How will you control these variables?
 - Can the people being tested affect the outcome?
 - How else might your observations of the test show a bias?
 - Whom will you test?
 - Will you have more than one group? Why or why not?
 - How will you control for bias on the part of those taking the remedy?
 - Who will perform the test?
 - How will you control for bias on the part of those dispensing the remedy?
 - In what form (salve, extracts, teas, tinctures, tablets, etc.) will the remedy be dispensed, and why?
 - When will you dispense the remedy, and why?
 - Where will the test be held?
 - What materials will you need? (This will form the "Materials" section of your written experiment.)



Topic 5A
**Smoking and
Statistics: What a
Tale They Tell**

(1–1.5 lessons)

This lesson introduces the worldwide problem of smoking, through statistics, graphs, and short supporting articles. Students are required to interpret statistics, drawing conclusions and making predictions about them. They will write a personal response based on their reading of the statistics, or a paragraph describing the statistics that personally affect them the most. Other main

academic tasks are: surveying, understanding, explaining and evaluating graphs and tables, describing graphs and figures, note taking, viewing critically, viewing to extract specific information, recognizing implications, extracting salient points to summarize, comparing and contrasting, giving examples and referring to statistical charts, and asking for more information or for clarification.

Outcomes	Instructional and Learning Sequence
SLO 1.5 Examine and interpret various visual media... SLO 2.2 Use several visual techniques... SLO 3.3 Quote from or refer to sources... SLO 4.1 Use language to encourage... SLO 4.2 Communicate effectively to work with others... SLO 4.4 Manage group action... SLO 5.4 Show understanding of the effect of cultural background... SLO 6.1.5 Use selective attention... SLO 6.1.8 Use self-evaluation to check... SLO 6.2.4 Use note taking... SLO 6.2.5 Use deduction and induction... SLO 6.2.7 Use elaboration... SLO 6.2.9 Use summarization... SLO 6.3.1 Use questioning for clarification... SLO 6.3.2 Use co-operation...	Sequence 1 Activation Begin this topic by stating that smoking is a universal health problem. Show the picture of the child smoking (Handout 4-17: "Prevalence and Health"). What feelings does it evoke? Ask students to describe their reaction in one word. Ask students to answer the following focus questions individually: Do you smoke? Does anyone in your family smoke? Do your friends smoke? Why do you (or others) smoke? Have you or anyone you know tried to quit? Do you know much about the worldwide statistics concerning smoking? (Add any other pertinent questions.) Once they have finished, discuss the answers as a class. Tell them they will have a chance to analyze a number of visuals and statistics about smoking, taken from the World Health Organization (WHO). Jigsaw Activity Divide the students into groups of four. Give each person in each group one of the visuals from the WHO Tobacco Atlas (Handouts 4-18, 4-19, 4-20, and 4-21). - Have each group look at the organization of the statistic sheets, noting the different features. There is always a written passage on the left-hand side of the page, but for this assignment ask students to ignore it and concentrate on the graphics to extract their information. - They may also look at the clipboard and any bubbles or charts. Give the students 10 minutes to examine their visuals. - Write down as much information as they can glean from the visual. (For example, in 1960, 20 percent more teens were smoking in Japan than in the U.K.) After 10 minutes, have the people with the same visuals from each group form new groups and meet and compare their information. - Give them 10 minutes to decide on the 8 to 10 most important points they have written down and the conclusions they have reached about the information. - They must come to a consensus. The points should be recorded. - Have the four students of the original groups meet together again. Each one should share his or her visual with other group members, emphasizing the most important pieces of information in his or her statistics. The speaker can use the visual and his or her notes. Other group members take notes. Move from person to person until all of the information has been shared. - Discuss the information and statistics in the large group. Draw conclusions from the information gleaned from each sheet of statistics. Now the class may read and discuss the information from the left-hand side of each sheet if so desired. (Language Features on page 102.)

Student Learning Tasks

Describe your reaction in one word to **Handout 4-17: "Prevalence and Health."** (I) Answer focus questions related to smoking. (I)

Discuss answers as a class. (C)

Work in groups of four. Each person in a group should examine a different visual from the WHO Tobacco Atlas (**Handout 4-18: "Male Smoking"** and **Handout 4-21: "Cigarette Consumption"**).

- a) Look at the organization of the statistic sheets, noting the different features.
- b) Look at the clipboard and any bubbles or charts.
- c) Write down as much information as you can glean from the visual. (I)
- d) Decide on the 8 to 10 most important points you have written down and the conclusions you have reached about the information. (I)
- e) Groups must come to consensus by discussing the statistics in as many different ways as possible and make predictions, hypotheses, and connections, and extrapolate information and draw conclusions from them. (G)
- f) Four students from the original groups meet to take turns sharing their visual with other group members, emphasizing the most important pieces of information. Other group members take notes. (G).
- g) Discuss information with the class and read the left-hand sidebars together. (C)

Teacher Notes and References

**Handout 4-17: "Prevalence and Health"**

Visuals from the World Health Organization Tobacco Atlas (one of each to each group):

Handout 4-18: "Male Smoking"**Handout 4-19: "Female Smoking"****Handout 4-20: "Youth"****Handout 4-21: "Cigarette Consumption"**

Help students focus on areas of interest and issue.

Students should discuss the statistics in as many different ways as possible and make predictions, hypotheses, and connections, and extrapolate information and draw conclusions from them. This activity may be done online with students (the URLs are provided at the bottom of each handout) to enable students to see the visuals in colour and enlarge the images so that the writing is legible.



Have questions prepared to help the students with their discussion.

Outcomes

Instructional and Learning Sequence

Language
Features

Vocabulary

Male Smoking chart: prevalence, physicians, trends, premature, peaked, declining, comprising

Female Smoking chart: differs from, as much, ten or more times more than, neurotic, launching, oriented, relatively, reflect, declining, notably, promotes, seductive, vitality, modernity, emancipation, sophistication, sexual allure, feminized

Youth chart: fewer than, over _% of, potential, overwhelming, passive smoking, dwindle, factors, promotion, access, peer pressure, siblings, self-image, perceiving "cool," decades, addicted, adolescence, contracting

Cigarette Consumption chart: annual, global consumption, leveling off, expansion, prevalence, absolute number, offset by, proportions, global epidemic, cranking out, consumers

Structures

adjectives to describe the picture

Structures to remember when answering focus questions: agreement of subjects and verbs, use of appropriate tense, appropriate use of articles, appropriate use of prepositions

Discourse Features

Discussion expressions: I smoke/don't smoke because...; even though they know it's a health risk...; more than... smoke in...; fewer (not less) than...; smoke in...

Some expressions to use in describing and comparing statistics: more than...; fewer than...; almost _%; 1 in 3... (replace with correct numbers); as many/few as...; ...has increased/decreased by...% or fraction; over... people...; etc.

Academic Language Functions

analyzing, seeking information, explaining, justifying

Student Learning Tasks

Teacher Notes and References

Outcomes	Instructional and Learning Sequence								
SLO 2.1.1 Analyze and edit texts... SLO 2.1.2 Use standard Canadian spelling... SLO 2.1.3 Use developing control of grammatical features... SLO 2.3.1 Use the structures and language features... SLO 3.3 Quote from or refer to sources... SLO 6.1.2 Use organizational planning... SLO 6.1.5 Use selective attention... SLO 6.1.8 Use self-evaluation to check...	Writing Activities Have students choose from the following activities: 1. After looking at all the information about smoking, write a paragraph about the three most important pieces of information learned. Refer to and quote from the statistical information. Elaborate on why this information is important to you and mention if it has moved you to take action of any kind. Make sure you follow good paragraph-writing rules and use a variety of sentence types.* OR 2. Respond fully to five of the response prompts suggested by your teacher. Each answer should be at least four to five sentences.* *In both assignments, students must use at least five new words from this lesson. <table border="1"> <tr> <td rowspan="4">Language Features</td><td>Structures</td></tr> <tr> <td>sentence combining</td></tr> <tr> <td>Discourse Features</td></tr> <tr> <td>Paragraph format: topic sentence; examples, with statistical support, concluding sentence</td></tr> <tr> <td rowspan="2"></td><td>Academic Language Functions</td></tr> <tr> <td>citing sources, justifying</td></tr> </table>	Language Features	Structures	sentence combining	Discourse Features	Paragraph format: topic sentence; examples, with statistical support, concluding sentence		Academic Language Functions	citing sources, justifying
Language Features	Structures								
	sentence combining								
	Discourse Features								
	Paragraph format: topic sentence; examples, with statistical support, concluding sentence								
	Academic Language Functions								
	citing sources, justifying								

Student Learning Tasks

1. Write a paragraph about the three most important pieces of information learned about smoking. Elaborate.* (I)

OR

2. Respond fully to five of the response prompts provided. Each answer should be at least four to five sentences.*

* In both assignments, you must use at least five new words from this lesson.

Teacher Notes and References

Suggested response prompts:

1. I was shocked...
2. I was disgusted...
3. I was moved to action by...
4. I am going to rethink... because...
5. It is very thought-provoking to know...
6. Obviously, smoking is...
7. I did not realize...
8. I wonder...
9. The differences between... and ... really...
10. I am concerned about...

Outcomes

SLO 1.5 Examine and interpret various visual media...

SLO 6.1.5 Use selective attention...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

Instructional and Learning Sequence

Roundup

Have students write a personal response in their journal or Learning Logs about the use of these statistical charts to glean information. What did they like about them? What did they dislike about them? What techniques did the creators use to organize the information on the pages? Were they successful? What learning strategies did they use to help them interpret the statistics?

Language Features

Academic Language Functions

evaluating, analyzing

Student Learning Tasks

Write a personal response in your journal about the use of the statistical charts to glean information about smoking.

In your Learning Log, discuss the learning strategies you used to interpret the statistics.

Teacher Notes and References



Prevalence and Health

PREVALENCE AND HEALTH



"... tobacco is the only legally available consumer product
which kills people when it is routinely used as intended."

The World Health Organization, 1998

Copyright WHO Tobacco Atlas. <www.who.int/tobacco/en/atlas3.jpg> Reproduced by permission.



Male Smoking

Male Smoking

Smoking has been portrayed by its sellers as a manly, masculine habit, linked to health, happiness, fitness, wealth, power and sexual success. In reality, it leads to sickness, premature death and sexual problems.

Almost one billion men in the world smoke about 35 percent of men in developed countries and 50 percent of men in developing countries. Trends in both developed and developing countries show that male smoking rates have now peaked and, slowly but surely, are declining. However, this is an extremely slow trend over decades, and in the meantime men are dying in their millions from tobacco. In general, the educated man is giving up the habit first, so that smoking is becoming a habit of poorer, less educated males.

China deserves special mention because of the enormity of the problem. Comprising over 900 million male smokers, this huge market is, according to Philip Morris, "the most important feature on the landscape."

OVER 300 million
men in China
are equal to the
entire population
of the USA -
are smokers

Smoking trends
percentage of male smokers
1960-2000 selected countries





Male Smoking

Male Smoking

Smoking has been portrayed by its sellers as a healthy, refreshing habit, linked to health, happiness, stress, wealth, power, and a good sense of style. In reality, it leads to sickness, premature death, and sexual problems.

Almost one billion live in the world's poorest countries, about 65 percent of them in developing countries, and in general, they are the poorest. Trends in health care and living standards in these countries show that male smoking rates have risen steadily.

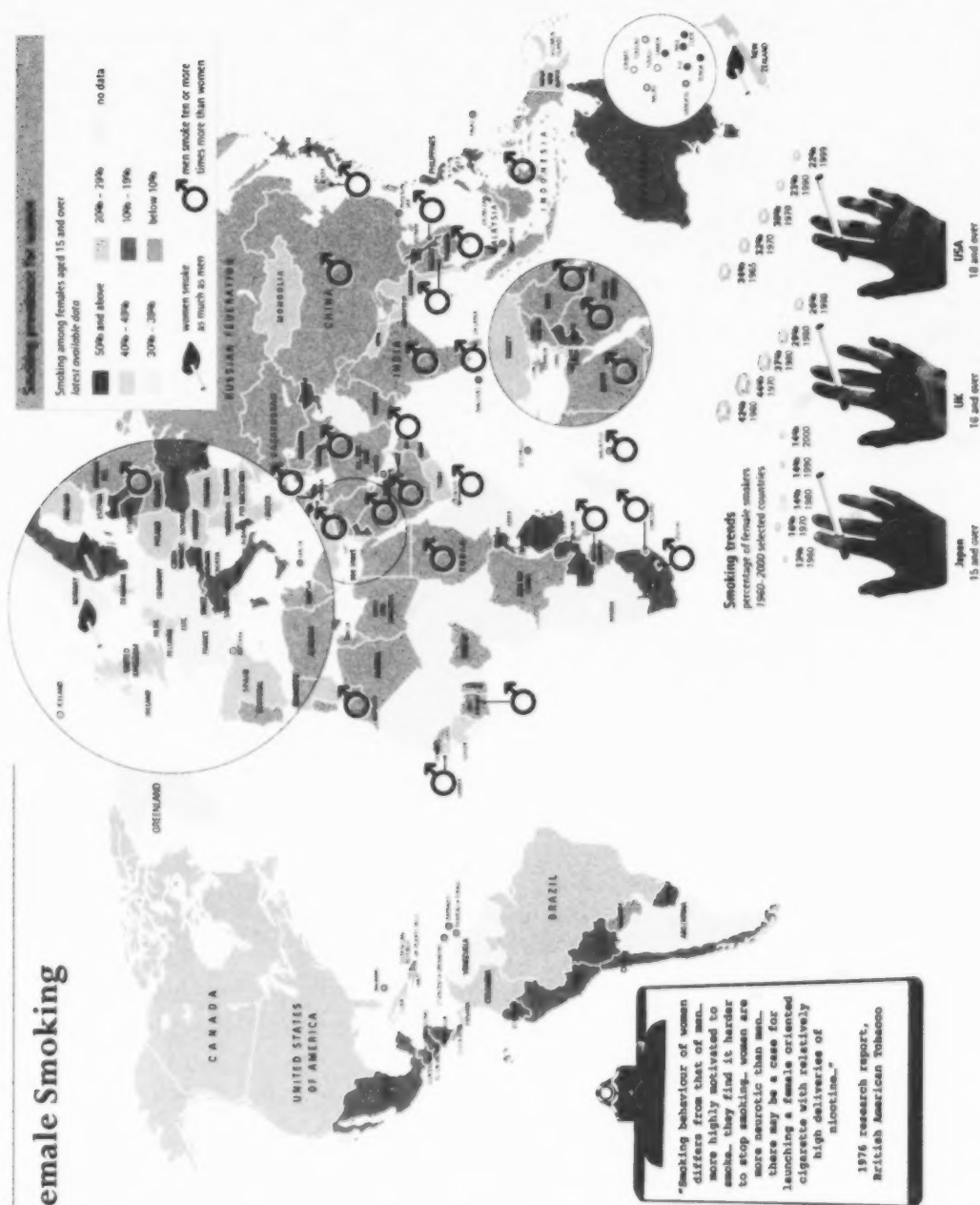
However, the rise in smoking is slow and uneven. In some countries, such as China, the rate has risen sharply in the past few years, but in others, such as India, the rate has risen more slowly. In general, the rate has risen in the past few years, but in others, such as India, the rate has risen more slowly.

A time chart is a special kind of bar chart. It shows the amount of the problem (in this case, the number of people smoking) over time. A time chart is a special kind of bar chart. It shows the amount of the problem (in this case, the number of people smoking) over time.





Female Smoking



Female Smoking

"...the current level of tobacco use among women in the world... does not reflect health awareness, but rather social resources." Dr. Guy Nelson, World Health Organization, WHO, 1998

About 250 million women in the world are daily smokers. About 22 percent of women in developed countries and 9 percent of women in developing countries smoke tobacco. In addition, many women in south Asia chew tobacco.

Cigarette smoking among women is declining in many developed countries, notably Australia, Canada, the UK and the USA. But this trend is not found in all developed countries. In several southern, central and eastern European countries cigarette smoking is either still increasing among women or has not shown any decline.

The tobacco industry promotes cigarettes to women using seductive but false images of vitality, slimness, modernity, emancipation, sophistication, and sexual allure. In reality, it causes disease and death. Tobacco companies have now produced a range of brands aimed at women. Most notable are the "women only" brands: these "feminised" cigarettes are long, extra thin, low tar, light coloured or menthol.



Female Smoking

Female Smoking

* The current level of tobacco use among women in the world does not reflect health awareness, but rather social traditions and women's low economic resources. (Dr. Gita Hagen-Bouard, Director General, WHO, 1998)

Almost 250 million women in the world are daily smokers. About 23 percent of women in

developed countries and 10 percent of women in developing countries smoke. Scholars doubt that many women in north Asia chain

tobacco.

A rapidly smoking among

women is declining in many

developed countries, notably

Australia, Canada, the UK, and the

USA. But this trend is not found

in all developed countries. In

several southern, central and

central European countries

cigarette smoking is either still

increasing among women or has

not shown any decline.

The tobacco industry promotes

cigarettes to women using

subliminal but false images of

wealth, glamour, independence,

emancipation, sophistication, and

sexual allure. In reality, it causes

disease and death. Tobacco

companies have now produced a

range of brands aimed at women.

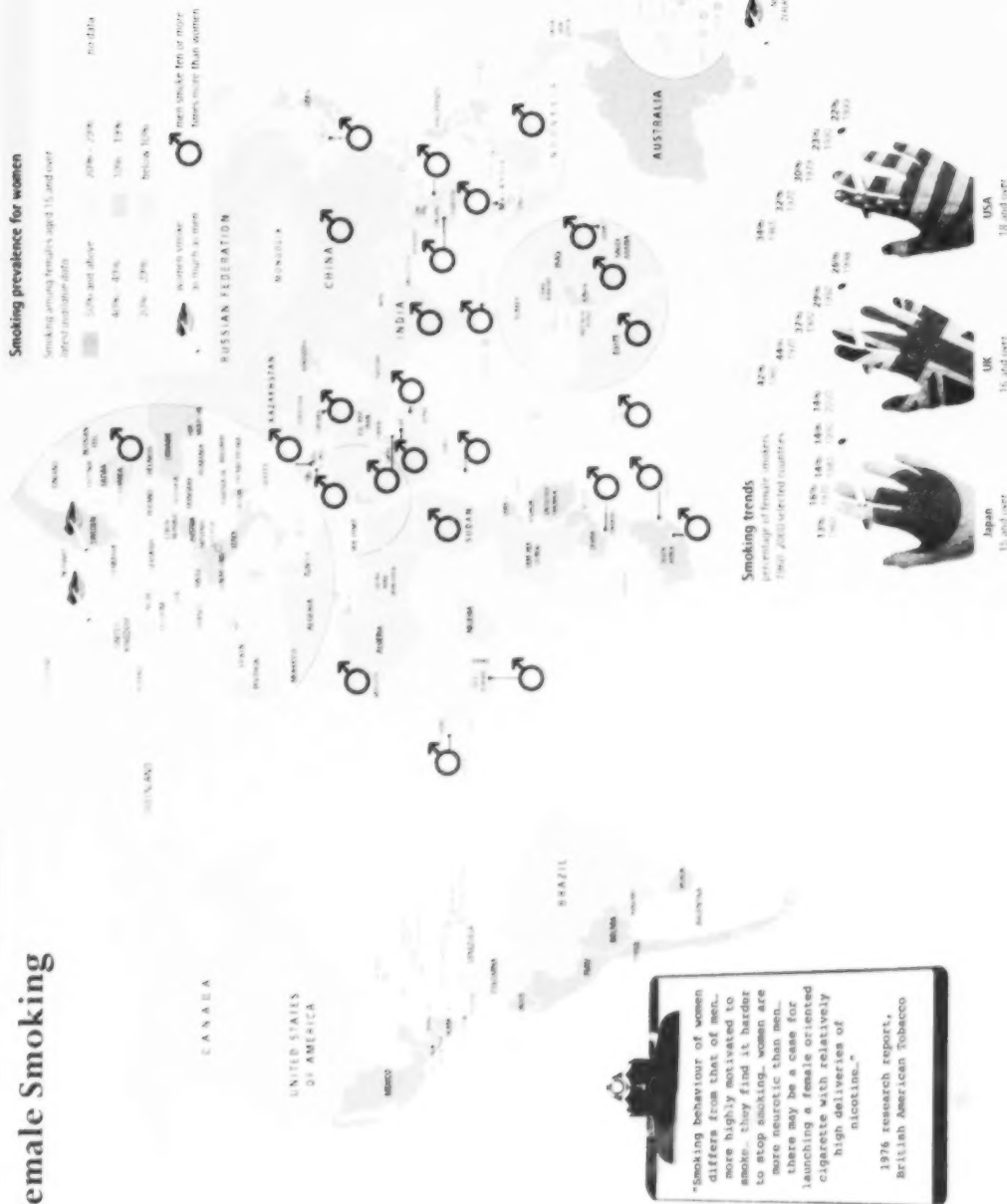
Most notable are the "women's"

only brands, those "kissed"

cigarettes are long, extra slim,

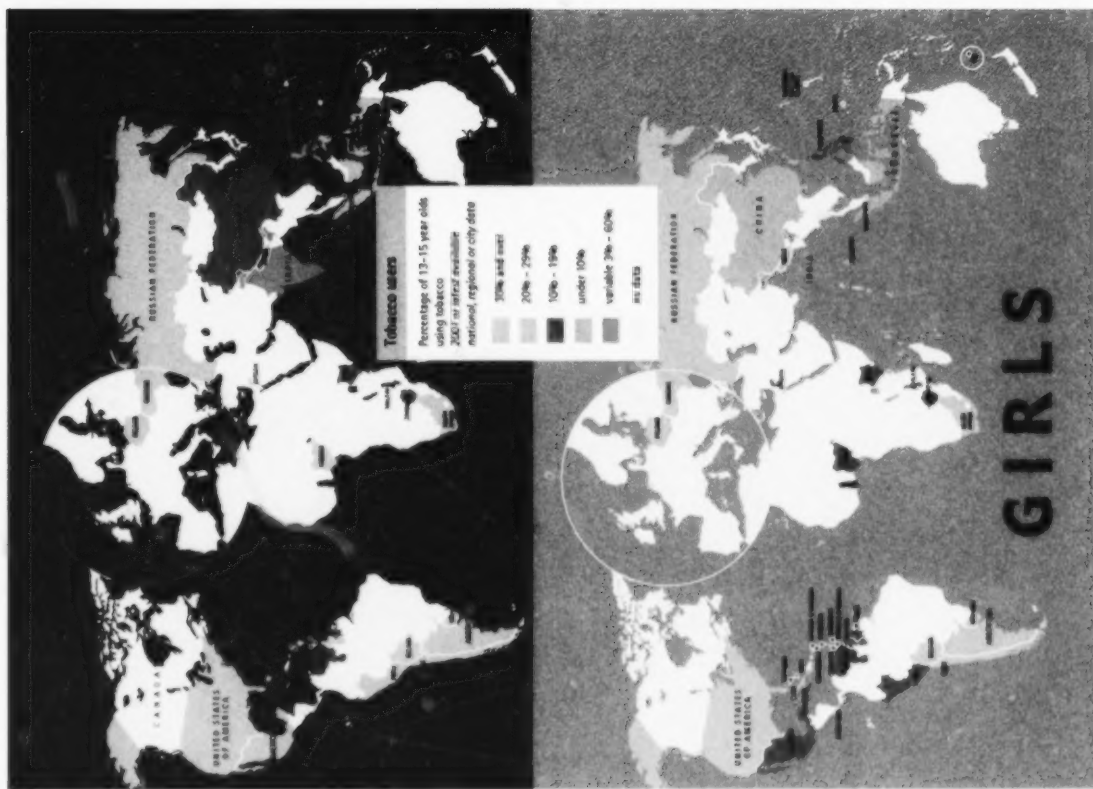
low tar, light coloured or

unadorned.





Youth



Youth

"If younger adults turn away from smoking, the industry will decline, just as a population which does not give birth will eventually dwindle."
— R. D. Harwood, 1984

The overwhelming majority of smokers began tobacco use before they reach adulthood. Among those young people who smoke, nearly one-quarter smoked their first cigarette before they reached the age of ten.

Several factors increase the risk of youth smoking. These include tobacco industry advertising and promotion, easy access to tobacco products, and low prices. Peer pressure plays an important role through friends' and siblings' smoking. Other risk factors associated with youth smoking include having a lower self image than peers, and perceiving that tobacco use is normal or "cool".

Many studies show that parental smoking is associated with higher youth smoking. While the most serious effects of tobacco use normally occur after decades of smoking, there are also immediate negative health effects for young smokers. Most teenage smokers are already addicted while in adolescence. The younger a person begins to smoke, the greater the risk of eventually contracting smoking caused diseases such as cancer or heart disease.

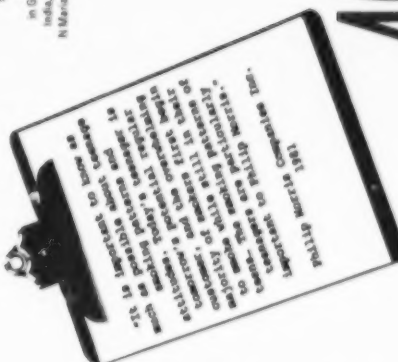
The highest youth smoking rates can be found in Central and Eastern Europe, sections of India, and some of the Western Pacific islands.

Over 40% of young people in Fiji, Ghana, Malawi, Nigeria, South Africa, Sri Lanka and Zimbabwe think boys who smoke have more friends.

Fewer than 5% of young people in Bahamas, Barbados, Costa Rica, Indonesia, Malawi, Montserrat, Poland, Russia, Singapore, Ukraine and Venezuela think girls who smoke look more attractive.



Early smokers
Over 30% of children smoked their first cigarette before age 10 in Ghana, Guinea, Guyana, India, Jamaica, Pakistan, Poland, St. Kitts and Nevis, and St. Lucia.



40%

of children worldwide are exposed to passive smoking at home



Youth



Early involvement

[illegible]



Cigarette Consumption

Cigarette Consumption

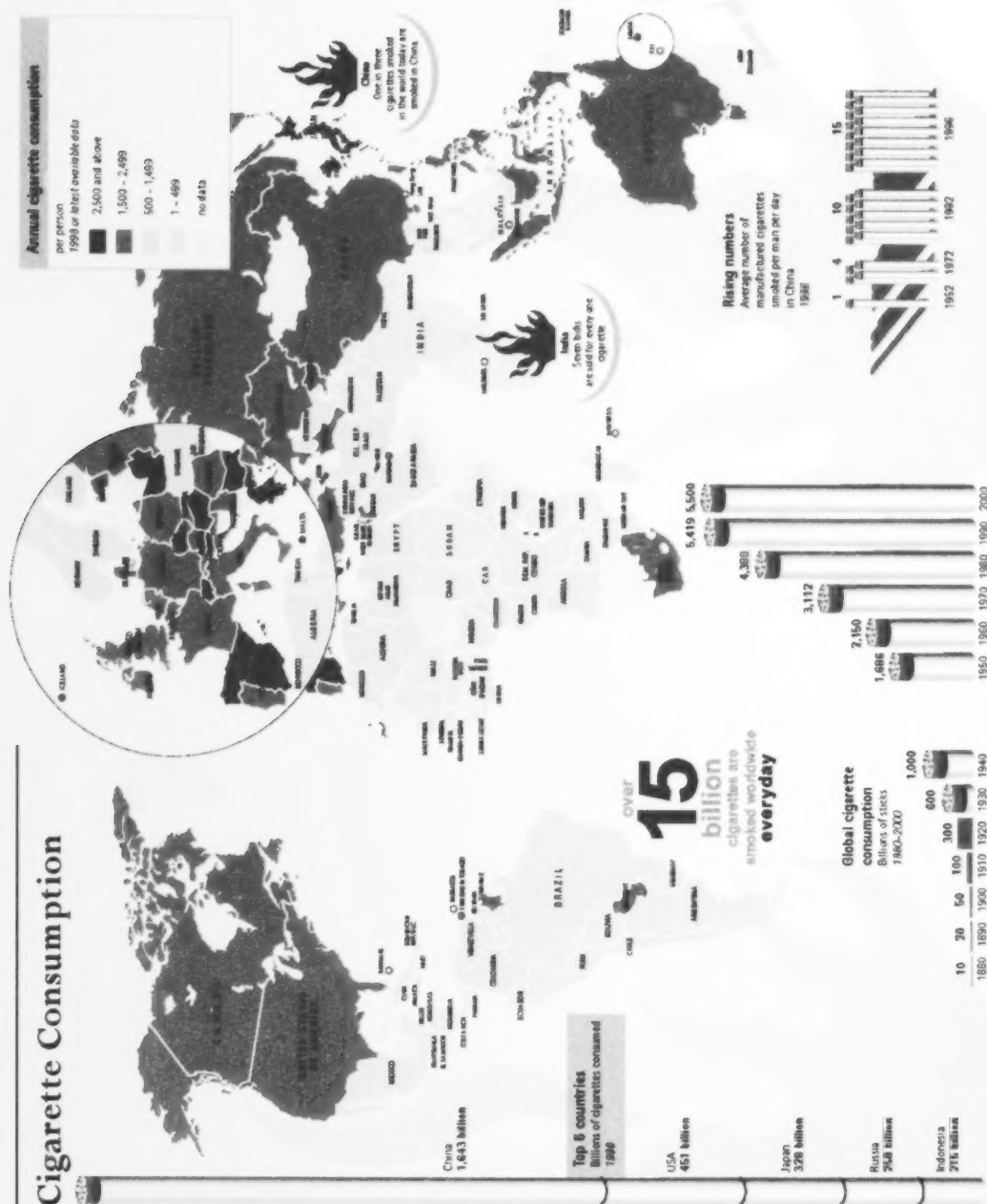
"Short, snappy, easily attempted, easily completed or just as easily discarded before completion - the cigarette is the symbol of the machine age."
New York Times, 1926

Global consumption of cigarettes has been rising steadily since manufactured cigarettes were introduced at the beginning of the 20th century. While consumption is levelling off and even decreasing in some countries, worldwide more people are smoking, and smokers are smoking more cigarettes.

The numbers of smokers will increase mainly due to expansion of the world's population. By 2030 there will be at least another 2 billion people in the world. Even if prevalence rates fall, the absolute number of smokers will increase. The expected continuing decrease in male smoking prevalence will be offset by the increase in female smoking rates, especially in developing countries.

The consumption of tobacco has reached the proportions of a global epidemic. Tobacco companies are cranking out cigarettes at the rate of five and a half trillion a year — nearly 1,000 cigarettes for every man, woman, and child on the planet.

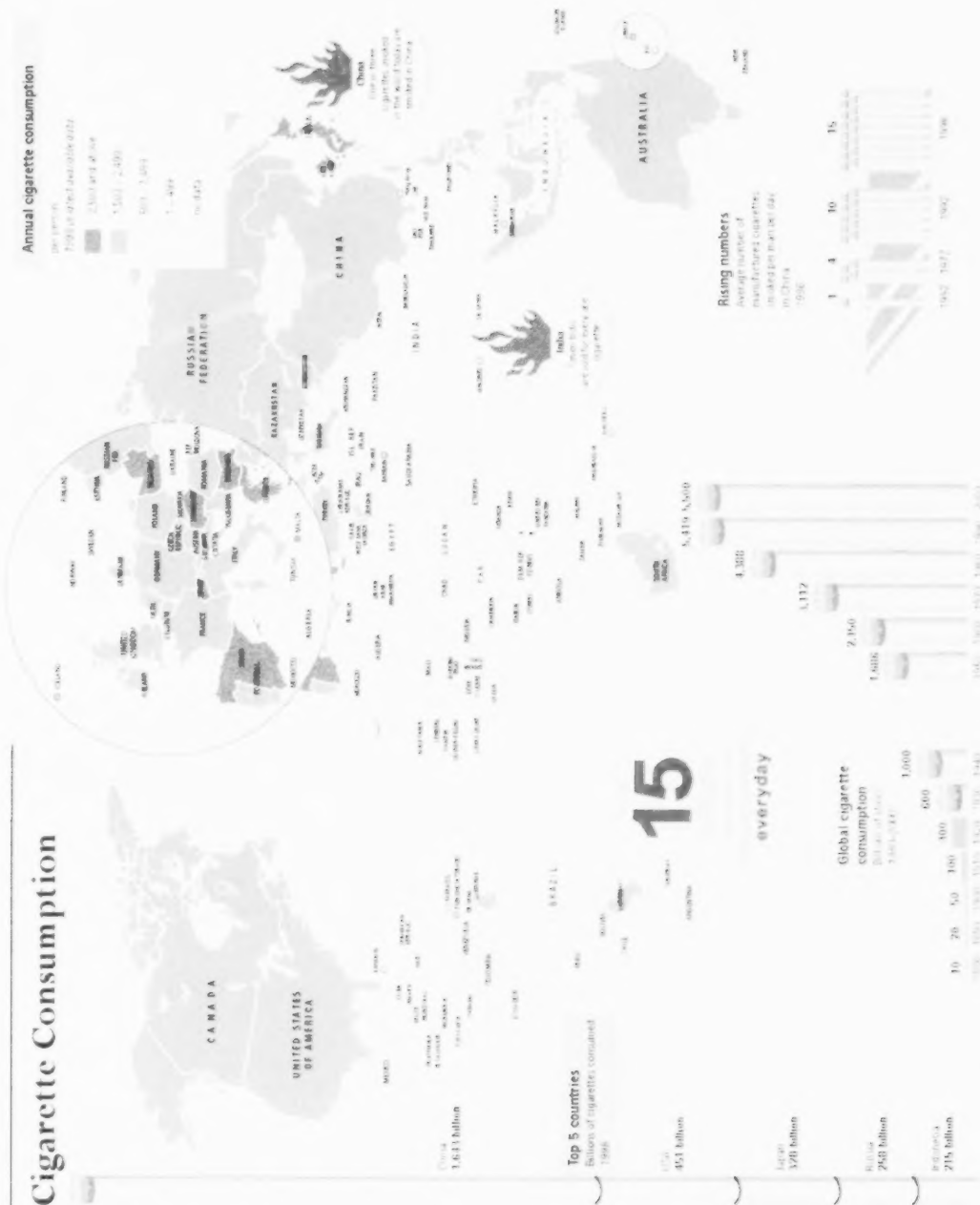
Cigarettes account for the largest share of manufactured exports, 96 percent of total value minus Asia, Australia and the Far East are by far the largest consumers (2.715 billion cigarettes), followed by the Americas (745 billion), Eastern Europe and Former Soviet Economies (631 billion) and Western Europe (606 billion).



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Cigarette Consumption



Cigarette Consumption

"Short snags, each attracted, each completed as just as easily discarded by the consumer, the cigarette is the symbol of the modern age." —*Time*, 1975

Global consumption of cigarettes has been rising for many years. In 1998, the world consumed 5.6 trillion cigarettes. At the beginning of the 21st century, while consumption is leveling off and even decreasing in some countries, smoking rates are still rising in many others.

The number of smokers will not rise steadily due to regulations of the world's population. By 2010, the world's population will be 6.5 billion people in the world. Even if present rates fall, the number of smokers will rise. The expected increase in smoking prevalence will be offset by the increase in female smoking rates, especially in developing countries.

The consumption of tobacco has increased the proportion of a global population that are smokers. In 1998, 1.1 billion people were smoking cigarettes at the rate of five and a half trillion a year—nearly 1,000 cigarettes for every man, woman, and child on the planet.

Cigarette consumption for the largest share of total cigarette consumption is in the Western Hemisphere, followed by the Americas (1.1 trillion), Europe and the Soviet Union (800 billion), and Western Europe (600 billion).





Topic 5B

**Smoking and the
Media**

(2 lessons)

In this lesson, students use statistical information to further understand the goals of tobacco companies. They look at Canadian tobacco packaging and evaluate the effectiveness of the anti-smoking campaign, and design a photo essay that centres on a smoking issue that is important to them. They share their essays with a partner and each partner writes a 250-word description of his or her partner's photo essay. Some of the main

academic tasks are: producing intelligible spoken English; describing graphs, maps, and figures; using visual aids; summarizing, describing, and explaining; asking questions; stating a point of view; deducing the meaning of unfamiliar words and word groups; selecting relevant points; hypothesizing and predicting from trends; listening and viewing critically; and using an academic writing style.

Outcomes

SLO 1.5 Examine and interpret various visual media...

SLO 3.3 Quote from or refer to sources...

SLO 4.4 Manage group action...

SLO 6.1.1 Use advanced organization...

SLO 6.2.1 Use resourcing to access...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

Instructional and Learning Sequence

Sequence 1

The beginning of this lesson will again focus on examining, discussing, and drawing conclusions from statistics.

Activation

Divide students into quads. Give each quad **Handout 4-22: "Tobacco Companies"** and **Handout 4-23: "Tobacco Industry Promotion."** Ask the students to do the following: Preview the "Tobacco Companies" and "Tobacco Industry Promotion" statistics and articles, noticing that the organization is similar to the statistical fact sheets from the previous lesson.

- a) Students first read the column of text on the left-hand side of the handouts in their quads and try to figure out the meanings of new words using context clues, knowledge of word families and affixes, and general knowledge.
- b) As a class, students discuss new vocabulary and information presented in the written articles.
- c) Then, students go back to their quads and look carefully at the map, the visuals, the clipboard, and different types of graphs, discussing the information presented and describing the visual information in words. They will find as many relationships as they can, look at trends, and predict the future.
- d) Each group chooses five important pieces of information from the readings and visuals to share with other groups, writing down the important information in point form as they share in their groups. They must draw at least one conclusion from each of the pieces of information they decide to share. Students should be able to express their ideas in a number of ways verbally.
- e) As a class, students share information.

(Language Features on page 122.)

Student Learning Tasks

- a) In quads, preview **Handout 4-22: "Tobacco Companies"** and **Handout 4-23: "Tobacco Industry Promotion,"** looking at organizational pattern. Then, read and figure out the meanings of new words using context clues, knowledge of word families and affixes, and general knowledge. (6)
- b) Discuss new vocabulary and information presented in the written articles. (C)
- c) In quads look carefully at the map, the visuals, the clipboard, and different types of graphs, discuss the information presented, and describe the visual information in words. Look for relationships and future trends. (6)
- d) Choose five important pieces of information from the readings and visuals to share, writing down the important information and drawing at least one conclusion from each of the pieces of information. (6) (C)
- e) Share information with the class. (C)

Teacher Notes and References

Handout 4-22: "Tobacco Companies"

Handout 4-23: "Tobacco Industry Promotion"



Have students name/describe the different types of graphs used in "Tobacco Industry Promotion," and decide why each one was used for its specific purpose.

Outcomes

Instructional and Learning Sequence

**Language
Features**

Vocabulary

Tobacco Companies: another module referral to "Handout #"

a) From graphs and visuals: sponsorship, enables, acronym BAT, JTI

b) From the article: transnational, excluding, merge, intricate, joint ventures, monopolies, decline, state-owned, enterprises, privatized, IMF, pressurized, consumption, massively, manufacturing capacity

Tobacco Industry Promotion:

a) From graphs and visuals: global market share, public transport

b) From the article: reliable, estimate, expenditures, prohibited, limitations, promotional allowances, bolder, retailers, facilitate, venues, exploited, "pop" events

Structures

appropriate use of tense, articles, plural forms, comparative/superlative forms, appropriate subordinate and relative clauses

Discourse Features

cause/effect markers, compare/contrast markers

Academic Language Functions

analyzing, interpreting, explaining, concluding

Student Learning Tasks

Teacher Notes and References

Outcomes

SLO 1.5 Examine and interpret various visual media...

SLO 4.2 Communicate effectively to work with others...

SLO 6.1.5 Use selective attention...

SLO 6.2.7 Use elaboration...

SLO 6.2.10 Use translation...

Instructional and Learning Sequence

Sequence 2

Activity

- a) Divide students into triads. Give each group a copy of **Handout 4-22**: "Tobacco Companies," and **Handout 4-23**: "Tobacco Industry Promotion.. Have students look them over carefully and discuss them.

Responding

- b) Students each record one adjective to describe each picture. Students may use a thesaurus and a translator, if necessary. Adjectives should be written down and explained. Try to have students avoid over-using the same adjectives and discourage the use of those that are too general (i.e., bad, ugly, terrible, etc.). What emotion does each picture evoke? Again, use one clear, descriptive word to capture the emotion felt. Students should record the descriptive words with their meanings in their personal dictionaries. Finally, have each student describe one picture/graphic to another student as vividly as possible.

Language Features

Structures

specific descriptive adjectives to describe pictures;
appropriate use of past, present, and future tenses (e.g.,
present progressive to describe the cigarette package
warnings)

Academic Language Functions

describing

Student Learning Tasks

- a) In triads, discuss **Handout 4-24: "A Smoker's Hand,"** and **Handout 4-25: "Cigarette Package Warnings."** (6)
- b) In your personal dictionary, record one adjective to describe each picture. Record one clear, descriptive word for the emotion evoked by the picture. (1)
- c) Describe one picture/graphic to another student as vividly as possible.

Teacher Notes and References

Handout 4-24: "A Smoker's Hand"

Handout 4-25: "Cigarette Package Warnings." Two samples are provided; more can be found on the Canada Health Online website at <www.hc-sc.gc.ca>. In the search box, type in "Cigarette packaging."



Choose cigarette package warnings that apply to a variety of different people (e.g., teenage boys, pregnant women, young children, the general public). You may choose to give each student in the group different warnings and graphics and have them share. They could verbally describe the label before showing it to the other group members.

Internet Resource: An alternative handout representing the "Smoker's Body" can be downloaded from the World Health Organization website at <www.who.int/tobacco/en/smokers_fr_en.pdf>. Caution should be exercised as the imagery may be controversial.

Outcomes

SLO 1.5 Examine and interpret various visual media...

SLO 5.3 Analyze ways in which language and text affect... contemporary culture

SLO 6.1.5 Use selective attention...

SLO 6.2.4 Use note taking...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

Instructional and Learning Sequence

Analyzing Responses

Students meet in triads and discuss the following questions, using the cigarette package warnings and the ad evaluation suggestions in Appendix 17:

1. What tactics are being used by the Canadian government and various other organizations to reach smokers and potential smokers?
2. Look at each cigarette label warning and determine who is being targeted.
3. Decide what, specifically, makes each warning persuasive, powerful, and effective. (Are words alone as powerful as words and visuals?)
4. Why were these specific targets chosen?

Students record responses in point form.

As a class, discuss the following: Can the warnings be interpreted in more than one way? What feelings will they evoke in the viewer? Do smokers and non-smokers in each group have different reactions to the labels?

Language Features

Vocabulary

tactics, targets, evoke

Discourse Features

Expressions for discussion: to describe, compare, evaluate, explain, etc.

Academic Language Functions

describing, comparing, explaining, evaluating

Student Learning Tasks

In triads, discuss the four questions posed by the teacher, using the cigarette package warnings and the ad evaluation suggestions in Appendix 17. (6)

Record responses in point form.

Participate in class discussion about cigarette package warnings.

Teacher Notes and References**Appendix 17: Evaluating Ads**

Outcomes

SLO 1.5 Examine and interpret various visual media...

SLO 1.6 Interpret a range of texts...

SLO 2.2 Use several visual techniques...

SLO 3.1 Seek, organize, and synthesize information...

SLO 3.2 Develop and implement a plan for researching...

SLO 3.3 Quote from or refer to sources...

SLO 4.1 Use language to encourage...

SLO 5.7 Select and present ideas ...keeping in mind the intended audience.

SLO 6.1.2 Use organizational planning...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.7 Use problem identification...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.1 Use resourcing to access...

SLO 6.2.3 Use grouping of items to classify...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

Instructional and Learning Sequence

Sequence 3

Writing Activity

Students will create a visual essay and write about one.

Step 1

After reading the information on how to create a visual essay (Appendix 18), students should create a visual essay about smoking, based on the last two lessons. (Perhaps a brainstorm for ideas that students could use would be helpful.) In their essays, students may include pictures, cartoons, political cartoons, drawings, collages, graphs, statistics, maps, or any other visual they choose. The visuals must be arranged to describe something, explain something, show a process, indicate a problem and solution, compare and contrast, or show a cause/result relationship. Each student should have a minimum of eight visuals, and at least three visuals that are not pictures or drawings.

Step 2

- Have students pair to share and discuss their visual essays.
- Each student will write a short 250-word piece about his or her partner's visual essay. It should reflect the organizational pattern of the visuals (e.g., cause/effect, process, problem/solution, etc.). Each student must use appropriate discourse markers and must include at least five new vocabulary words from these two lessons.
- Partners should act as peer editors for each other.

Language Features

Vocabulary

chosen from the last two lessons, appropriate for writing about the visual essay

Structures

appropriate use of tense
dependent on visuals

Discourse Features

discourse markers for process, compare/contrast, cause/result, problem/solution, etc.

Academic Language Functions

describing, comparing, contrasting, expressing cause/result, expressing problem/solution

Student Learning Tasks**Assignment**

Create a visual essay about smoking, using a variety of visual texts. **(I)**

- a) Pair to share and discuss your visual essays. **(P)**
- b) Write a short 250-word piece about his or her partner's visual essay. **(I)**
- c) Partners act as peer editors for each other. **(P)**

Teacher Notes and References**Appendix 18: Creating a Photo (Visual) Paragraph, Essay, or Report**

The teacher should provide some resource ideas for students.

An alternative suggestion is to have students do the visual essay and writing after the next smoking lesson, in order to use information from that lesson as well.

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.4 Use the steps of the writing process...

SLO 6.1.2 Use organizational planning...

SLO 6.2.7 Use elaboration...

SLO 1.5 Examine and interpret various visual media...

SLO 6.2.1 Use resourcing to access...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

Instructional and Learning Sequence

Alternative Writing Suggestion

Students write a persuasive essay based on the following statement:

Students state whether they agree or disagree with the assertion: Tobacco companies have the right to do whatever they need to do to sell their products.

Language Features

Structures

choose those you wish students to focus on

Discourse Features

structure of a persuasive essay

Academic Language Functions

persuading

Roundup

Have students look for an example of subliminal advertising, and describe where they found it and how it was used.

Language Features

Academic Language Functions

describing

Student Learning Tasks**Teacher Notes and References****Assignment**

Write a persuasive essay based on the following statement:

State whether you agree or disagree with the assertion: Tobacco companies have the right to do whatever they need to do to sell their products. (I)

Look for an example of subliminal advertising, and describe where you found it and how it was used. (I)

Tobacco Companies

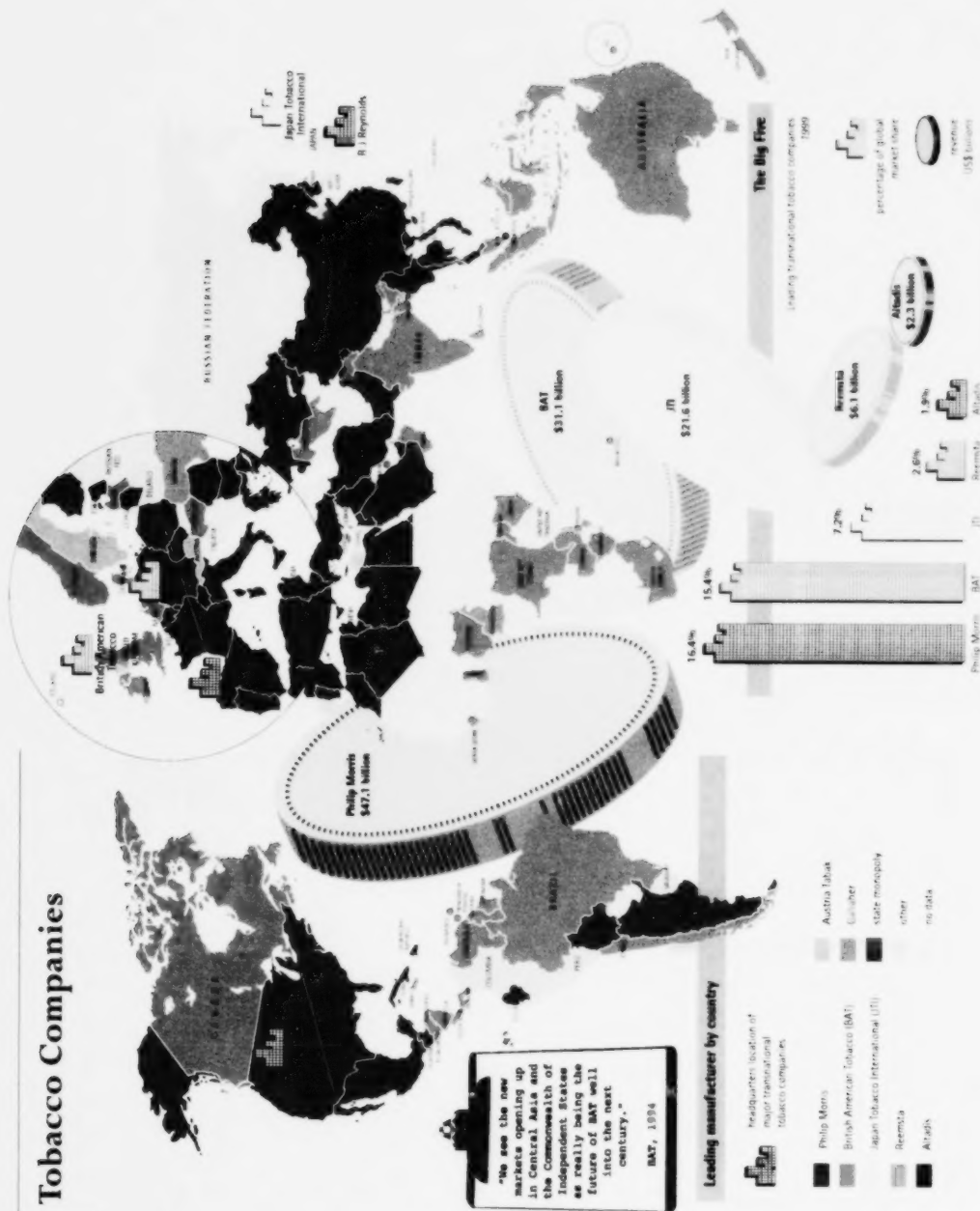
Tobacco Companies

Philip Morris is the world's largest transnational tobacco company, whose Marlboro brand is the world leader. In 1999 the company had sales of over US\$47 billion. However, excluding the US domestic market, BAT sells the most cigarettes worldwide and has the largest network in the most countries.

The tobacco industry is a mixture of some of the most powerful transnational commercial companies in the world. Tobacco companies, which frequently merge, own other large industries and run an intricate variety of joint ventures. State tobacco monopolies have been in decline since the 1980s. About 7,000 medium to large, state-owned enterprises were privatised in the 1990s and a further 100,000 in the 1990s. After the collapse of the former Soviet Union, from the late 1990s, the IMF has privatised countries such as the Republic of Korea, the Republic of Moldova, Thailand and Turkey to privatiser their state tobacco industry as a condition of loans.

The remaining monopolies represent a combined consumption of 2 billion cigarettes or 40 percent of the world's total cigarette consumption.

Since the early 1990s, the cigarette companies have massively increased their manufacturing capacity in developing countries and eastern Europe. Where once the rich countries exported "death and disease," increasingly these are manufactured locally.



Tobacco Companies

Tobacco Companies

Philip Morris is the world's largest transnational tobacco company, whose Marlboro brand is the world's best-selling brand. The company had sales of over \$100 billion in 1998, with 10% of sales in the United States. Philip Morris is the most aggressive worldwide and has the largest network in the United States.

The tobacco industry is a massive force in the United States, with 10% of the nation's gross domestic product and 10% of the nation's tax revenue. The industry is a major employer in the United States, with 10% of the nation's workforce. The industry is a major source of revenue for the United States, with 10% of the nation's tax revenue.

"We see the new markets opening up in Central Asia and the Commonwealth of Independent States as really being the future of BAT well into the next century."

BAT, 1994

Leading manufacturer by country



The tobacco industry is a massive force in the United States, with 10% of the nation's gross domestic product and 10% of the nation's tax revenue. The industry is a major employer in the United States, with 10% of the nation's workforce. The industry is a major source of revenue for the United States, with 10% of the nation's tax revenue.





Tobacco Industry Promotion



Cigarettes are possibly the most marketed product in the world. While there is no reliable estimate of global cigarette marketing expenditures, it is clearly in the tens of billions of US dollars a year.

In the USA alone over \$10 billion is spent a year on marketing cigarettes, and this is a time when advertising is predicted to be in decline and sales are in doubt.

There are three main reasons for this decline in advertising: a change in cigarette advertising, a change in cigarette advertising, and a change in cigarette advertising. Annual marketing expenditure in the USA is over \$10 billion, and over \$1 billion is spent on advertising. This is a significant increase from the \$1 billion spent in 1995. The increase is due to a number of factors, including a change in cigarette advertising, a change in cigarette advertising, and a change in cigarette advertising.

Cigarette marketing is highly competitive, and the industry is spending more on advertising than it is on the product itself. A significant factor in this is the change in cigarette advertising, which has led to a decline in cigarette advertising. This is due to a number of factors, including a change in cigarette advertising, a change in cigarette advertising, and a change in cigarette advertising.

There are also the factors of advertising costs, which are rising, and the decline in cigarette advertising, which is leading to a decline in cigarette advertising. This is due to a number of factors, including a change in cigarette advertising, a change in cigarette advertising, and a change in cigarette advertising.



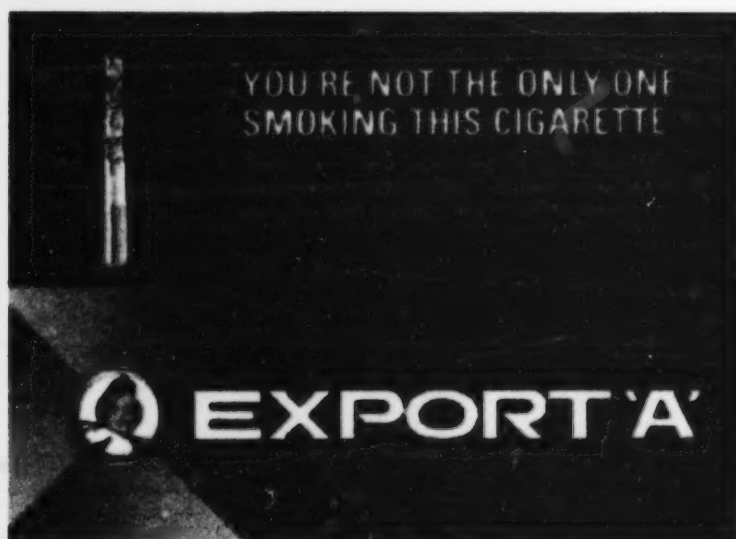
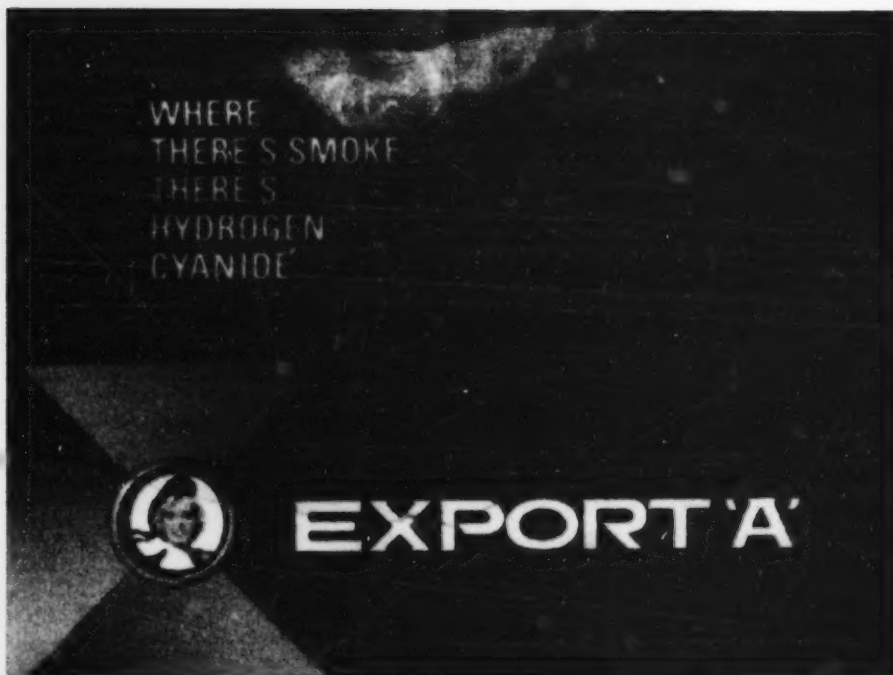
A Smoker's Hand



*Copyright Health Canada. <www.hc-sc.gc.ca/francais/media/photos/tabac/fi/00000008.jpg>.



Cigarette Package Warnings



(continued)

*Copyright Health Canada. <www.hc-sc.gc.ca>.

Cigarette Package Warnings (continued)

Manufacturers of cigarettes for sale in Canada are required to print one of the 16 new health warnings shown above on each pack of cigarettes. The requirement came into effect on December 23rd, 2000 for brands with a market share of 2% or more, and will be extended to smaller brands by mid-2001.

The above JPGs were scanned from cigarette packs purchased in Québec on January 2nd, 2001. The new warnings are trickling into retail outlets across the country as stocks of cigarettes are renewed. Warnings showed up first on the country's four biggest brands: du Maurier, Player's and Matinée (all manufactured by Imperial Tobacco of Canada, a subsidiary of British American Tobacco) and Export 'A' (manufactured by JTI-Macdonald, a subsidiary of Japan Tobacco International).

The new warning system extends to carton wrappers, which now include a warning on each of their six surfaces.



Topic 5C
**Smoking
Prevention and
Cessation**

(2–3 lessons)

This lesson focuses on statistics related to health risks and deaths caused by smoking. It also presents ideas to encourage quitting, and ends with a discussion about the controversial topic of smoking bans. The culminating activity is a town hall forum in which some of the parties with vested interests debate the pros and cons of an enforced smoking ban. Other academic tasks are: making notes; using notes to speak from; using abbreviations and symbols; using intelligible pronunciation; using visual aids; giving

information in detail; illustrating, amplifying, explaining, and emphasizing a point; summarizing; introducing and concluding; interrupting politely; questioning for clarification; holding the floor; distinguishing fact from opinion; deducing the meaning of unfamiliar words and word groups; creating and following an argument; reading critically; evaluating a text; understanding, describing, and creating graphs and tables; comparing and contrasting; classifying; and referring to and citing sources.

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 1.5 Examine and interpret various visual media...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 3.3 Quote from or refer to sources...

SLO 6.1.5 Use selective attention...

SLO 6.2.7 Use elaboration...

Instructional and Learning Sequence**Sequence 1****Activation****Step 1**

Give each student a copy of the three sheets of statistical information (**Handout 4-26: "Health Risks," Handout 4-27: "Passive Smoking,"** and **Handout 4-28: "Deaths"**), or refer them to the Internet sites listed at the bottom of each handout.

- a) As a class, read aloud the written information on the left-hand side of each atlas page. Go over difficult vocabulary, breaking it into categories, using knowledge of stems and affixes, word families, as well as context clues and general knowledge to understand the text.
- b) Give the students 15 minutes to examine the statistical information presented visually in each of the handouts. As in the last two lessons, students will look at trends, patterns, similarities, differences, etc. in the visuals. This time, however, they will do this individually.
- c) Students individually take notes on all the important ideas and conclusions they can draw from the statistics (e.g., "Between 2025 and 2030, the projected number of annual deaths resulting from the use of or exposure to tobacco products is four million more in developing countries than in industrialized ones. This statistic seems to indicate that...").
- d) Meet as a class. Each student must identify one different conclusion drawn from each of the three handouts. The teacher records these on the board. What were the most important conclusions and statements made?

Step 2

Have students discuss the following questions: In your country of origin, who can smoke; at what age is it legal? Where can people smoke? How much do cigarettes cost? How old must a person be to buy cigarettes? Are there any measures being taken to try to stop people from smoking? Compare and contrast ideas from students of different countries.

(Language Features on page 144.)

Student Learning Tasks

- a) Together, read the written information on the **Handout 4-26: "Health Risks," Handout 4-27: "Passive Smoking,"** and **Handout 4-28: "Deaths."** (C)
- b) Examine the statistical information presented in each of the handouts. (I)
- c) Take notes on all the important ideas and conclusions you can draw from the statistics. (I)
- d) Identify and present to the class one different conclusion drawn from each of the three handouts. (I) (C)

Discuss given questions about smoking. Compare and contrast ideas with students of various countries. (C)

Teacher Notes and References

Handout 4-26: "Health Risks"

Handout 4-27: "Passive Smoking"

Handout 4-28: "Deaths"



You may want to create a key vocabulary list, which students can record.

Outcomes**Instructional and Learning Sequence****Language
Features****Vocabulary**

Examples from health risks—smoking terms/health terms: addictive, disability, cancer, strokes, emphysema, fatal, non-fatal, foetus, nicotine, genetic modification, vaccines, names of deadly chemicals, respiration, gingivitis, sputum (point out word families: fatal~fatality~non-fatal)

Vocabulary/markers to describe statistics: for example, more than; fewer than; while x..., y...; ... times as many will...; as a result of x, y...; x will increase when y..., If were to occur, then ...; When compared to x, y...; This statistic indicates/implies/suggests...; by comparing these graphs...

Discourse Features

discussion expressions to compare, contrast, explain, agree, disagree, add information, question, summarize, etc. (review)

Pronunciation

stress
thought groups
linkage reduction
problematic sounds

Academic Language Functions

seeking information, inferring, comparing, analyzing

Student Learning Tasks

Teacher Notes and References

Outcomes	Instructional and Learning Sequence		
SLO 1.5 Examine and interpret various visual media... SLO 2.2 Use several visual techniques... SLO 5.1 Identify common themes and symbols... SLO 5.4 Show understanding of the effect of cultural background... SLO 6.1.5 Use selective attention... SLO 6.2.4 Use note taking... SLO 6.2.8 Use imagery in the form of mental or actual pictures... SLO 6.3.2 Use co-operation...	Activity Step 1 Look over the statistics and written information from the WHO Tobacco Atlas pages, Handout 4-29: "Legislation: Health Warnings" and Handout 4-30: "Quitting": - Students talk about the statistics in small groups, drawing conclusions from them and sharing them in a fashion similar to the last two lessons. - Have students create a concept map as they brainstorm a list of ideas that would help prevent or decrease smoking. Talk a little about ideas used in Canada and in students' countries of origin. (When discussing "Legislation: Health Warnings," point out Canada's leadership role in package warnings.) Make sure to refer to anti-smoking ad campaigns, nicotine gum and the patch, taxes on and cost of cigarettes, fines, age limits for smoking and buying cigarettes, smoking help lines, graphic ads and health warnings, pamphlets/ads to tell a smoker how his or her health improves immediately when he or she stops, and smoking bans (see Handout 4-31: "Winnipeg Free Press: Smokers' Helpline and Statistics" and Handout 4-32: "Benefits of Quitting Smoking"). Add any other initiatives that you or your students know of. Give some examples of pamphlets and ads. <table border="1"> <tr> <td>Language Features</td><td> Vocabulary From "Quitting": pre-contemplation, contemplation, maintenance, relapse, interventions, initiation, cessation; other vocabulary selected from handouts Acronyms: nicotine replacement therapy (NRT) Note: Language features are similar to those on the previous pages. </td></tr> </table>	Language Features	Vocabulary From "Quitting": pre-contemplation, contemplation, maintenance, relapse, interventions, initiation, cessation; other vocabulary selected from handouts Acronyms: nicotine replacement therapy (NRT) Note: Language features are similar to those on the previous pages.
Language Features	Vocabulary From "Quitting": pre-contemplation, contemplation, maintenance, relapse, interventions, initiation, cessation; other vocabulary selected from handouts Acronyms: nicotine replacement therapy (NRT) Note: Language features are similar to those on the previous pages.		

Student Learning Tasks

- a) Discuss the statistics in small groups, drawing conclusions from them and sharing them. (6)
- b) Create a concept map as you brainstorm a list of ideas that would help prevent or decrease smoking. (6)

Teacher Notes and References

Handout 4-29: "Legislation: Health Warnings"

Handout 4-30: "Quitting"

Information about quitting (mostly teacher-provided). These resources should be shown to the students, not copied for each of them.

Sample

Handout 4-31: "Winnipeg Free Press: Smokers' Helpline and Statistics" presented by the Canadian Cancer Society. The Canadian Cancer Society is accessible at <www.cancer.ca>, where there are more resources.

Handout 4-32: "Benefits of Quitting Smoking"



Based on the statistics, you may want to create a specific set of questions for students to answer. You may also want to create a key vocabulary list as done in previous lessons.

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.5 Examine and interpret various visual media...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 2.2 Use several visual techniques...

SLO 4.6 Respond to and critique a variety of individual perspectives...

SLO 6.1.2 Use organizational planning...

SLO 6.1.3 Use directed attention...

SLO 6.1.5 Use selective attention...

SLO 6.2.3 Use grouping of items to classify...

SLO 6.2.5 Use deduction and induction

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

Instructional and Learning Sequence

Step 2

Present a list of statistics drawn from **Handout 4-33: "Legislation: Smoke-Free Areas"** to students.

- Group students in quads and have the students decide what types of graphs would most effectively present the information visually.
- Each group creates its graphs, trying not to replicate those from previous WHO Tobacco Atlas pages.
- Distribute **Handout 4-33: "Legislation: Smoke-Free Areas"** to students and compare their graphs with those on the handout.

Step 3

- Students discuss how a smoking ban would work in their countries. Brainstorm the various types of people with a vested interest in smoking bans.
- Create a graphic organizer to classify groups of people who would support or oppose a ban.

Introduce Winnipeg's smoking ban through "Smoking Bylaw Rolls Out across Winnipeg" (**Handout 4-34: "Smoking Bylaw Rolls Out across Winnipeg, September 2, 2003"**). Decide how the additional material concerning this particular ban will be read and shared, and have students follow instructions.

Language Features

Pronunciation

You can use the video clip to focus on linkage. The script is provided. Do not give the script as it is to the students. Listen to the video and find examples of linkage. Remove the linked words from the script, and put one blank in their place. Students listen to the video and record the two or three linked words in the one blank. Examples:

- You'd like to sit in the smoking section?
- As of September 1st...
- We will lose a percentage of business...
- But at Winnipeg's largest legion...

Student Learning Tasks

- a) In quads, decide what types of graphs would be the best to present the given information visually. (B)
- b) Create graphs, trying not to replicate those from previous WHO Tobacco Atlas pages. (B)
- c) Compare student graphs with those on **Handout 4-33: "Legislation: Smoke-Free Areas."** (C)
- a) Discuss how a smoking ban would work in your country of origin. (C)
- b) Create a graphic organizer to classify groups of people who would support or oppose a ban. (C)

Teacher Notes and References



Handout 4-33: "Legislation: Smoke-Free Areas"

Handout 4-34: "Smoking Bylaw Rolls Out across Winnipeg, September 2, 2003"

Internet Resources (Optional):

"Winnipeg Public Smoking Ban Takes Effect" (To access the written script, go to <www.ctv.ca> On this page, go to "search site" and type in "Winnipeg public smoking ban takes effect." The script page will appear. From this page, you can access the video clip by clicking on "related video": Jill Macyshon discusses a move to tighten smoking restrictions in Winnipeg: 2:01. Look in Language Features column for teaching suggestions.

"Smoking Ban Has No Impact on Food, Drink Sales."

<www.newsandevents.utoronto.ca/bin5/030618a.asp>



Vocabulary from the written portion of this atlas page is recycled from previous lessons.

Remind students of some of the types of graphs and their purposes:

1. Bar graph—used to make comparisons. Bars are separated because the data are not continuous.
2. Histogram—bar graph without spaces between bars; used to depict continuous data.
3. Line graph—shows change over time; points are placed on specific coordinates to show fluctuations.
4. Pictograph—creative, interesting symbols to represent stated quantities.
5. Pie chart—shows how a whole quantity is divided.

Outcomes

This activity draws on elements of all SLOs.

Instructional and Learning Sequence

Sequence 3

Main Activity

This assignment will be the culminating activity for Topics 5A, 5B, and 5C.

- a) Manitoba implemented a province-wide smoking ban on October 1, 2004. Students will perform a role-play of a town hall forum that is set prior to this event, discussing the proposed smoking ban in all public buildings (see handout for complete instructions). Divide students into an appropriate number of groups for the class. Depending on the class size, assign approximately four students to be judges and six or so to take roles in each group. The teacher acts as moderator. Each role player tries his or her best to convince the others and the judges that his or her point of view is correct. Suggested roles: long-time smoker, bar owner, tobacco company representative, reformed smoker, person dying from lung cancer due to second-hand smoke, oncologist. Each judge makes notes on the content and presentation of each character.
- b) Students will decide what their point of view should be and prepare their own arguments. They will do research in order to prepare, using a variety of sources. One should be a primary source. Students must create point-form notes from their research and must include statistics to support their arguments. These notes and statistics will be evaluated.
- c) Each student must write up his or her argument and hand in a copy for evaluation.
- d) Students must practise before the actual town forum is held. They should use only point-form notes in the forum and speak in their own words, using at least seven new vocabulary words and seven statistics they have learned.

Language Features

Vocabulary

from articles, graphs, statistics—relevant to presentation of information

Discourse Features

format of an oral presentation for a forum

creation of jotted notes for speaking

Discussion expressions: to agree, disagree, exemplify, clarify, question, add information, summarize (review)

Pronunciation

Students should monitor their own pronunciation. The teacher should hear each student's presentation before the forum to check/correct for intelligibility.

Academic Language Functions

describing, explaining, comparing, contrasting, summarizing, evaluating, justifying and persuading

Student Learning Tasks**Assignment**

- a) Hold a town hall forum discussing a proposed smoking ban in all public buildings. (B) (C)
- b) Prepare for assigned role. See **Handout 4-35: "Town Hall Forum: Smoking Ban"** for complete instructions. (I)
- c) Write up your argument and hand in a copy for evaluation. (I)
- d) Use your point-form notes and speak in your own words at the town hall forum.

Teacher Notes and References

Handout 4-35: "Town Hall Forum: Smoking Ban" (role-play)

Internet Resources: There are excellent teacher resources at www.lung.ca/teachers. Teachers can find an experiment there to suit specific purposes.



If you have enough students, create two groups of ten, with four students as judges and six taking roles. Modify the numbers as required.

The teacher decides whether judges must come to a consensus.

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.5 Examine and interpret various visual media...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 6.1.5 Use selective attention...

SLO 6.2.1 Use resourcing to access...

Instructional and Learning Sequence

Sequence 4

Roundup

Using all the information from the three lessons on smoking, students write a 250-word journal entry, using appropriate statistics, to describe how they would convince someone to quit smoking.

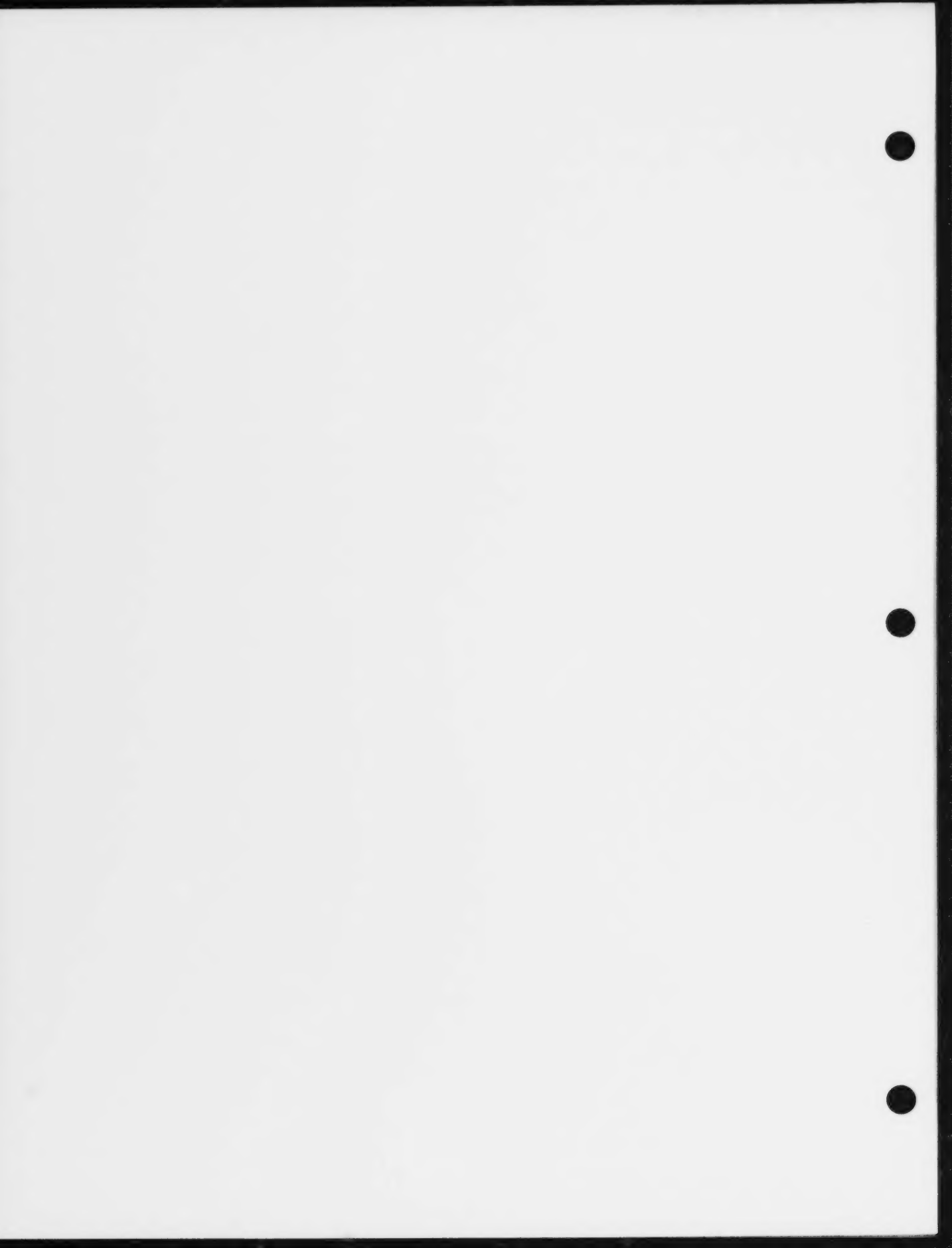
Language Features

Academic Language Functions

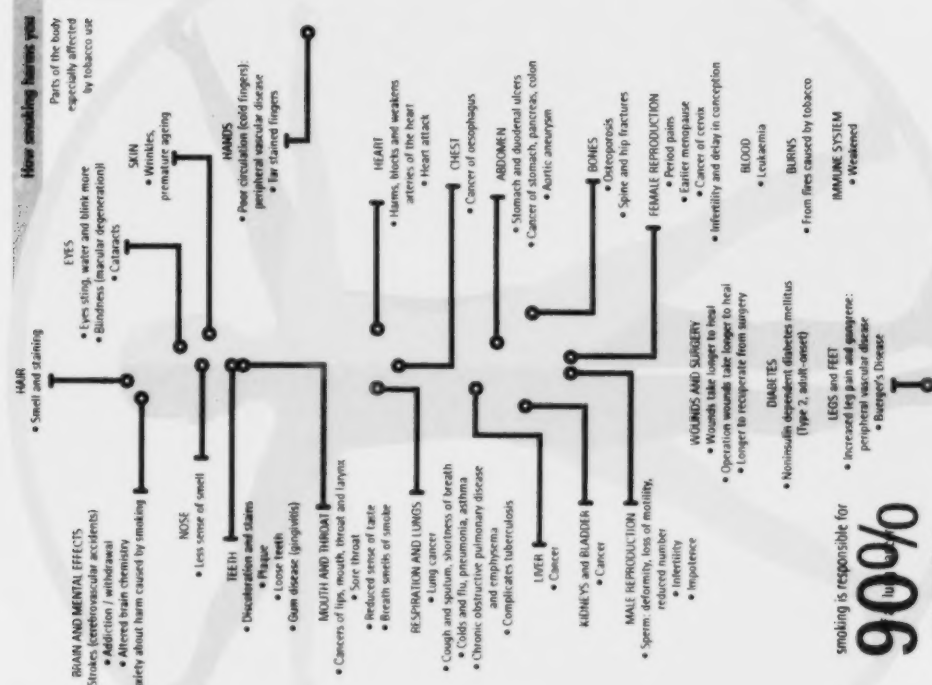
explaining, describing

Student Learning Tasks**Teacher Notes and References**

Write a 250-word journal entry, using appropriate statistics, to describe how you would convince someone to quit smoking. (I)



Health Risks



Health Risks

Tobacco smoke contains over 4,000 chemicals, some of which have mutated irritant properties and some 40 are known or suspected carcinogens.

Tobacco smoke includes as found in paint stripper, Ammonia, Acetic acid, Ant poison, Butane, lighter fuel, Carbon monoxide, Car batteries, Carbon monoxide, DDT, Insecticide, Hydrogen cyanide, Gas chambers, Methanol, Mouth balls, Nicotine, Industrial solvent, Vinyl chloride, plastics.

Time ticks away

Every cigarette takes 7 minutes off your life

Babies in the womb

Smoking in pregnancy

Increased risks:

- Spontaneous abortion / miscarriage
- Ectopic pregnancy
- Abnormal placenta
- Placenta praevia
- Premature rupture of the membranes
- Premature birth

Fetuses:

• Smaller infant (for gestational age)

• Stillborn infant

• Birth defects, eg congenital limb reduction

• Increased nicotine receptors in baby's brain

• Increased likelihood of becoming a teenager

• Possible physical and mental long term effects

Tobacco is packed with harmful and addictive substances.

Scientific evidence has shown conclusively that all forms of tobacco cause health problems throughout life, frequently resulting in death or disability.

Smokers have markedly increased risks of multiple cancers, particularly lung cancer, as well as a far greater risk of heart disease, strokes, emphysema and many other fatal and non fatal diseases. If they chew tobacco, they risk cancer of the lip, tongue and mouth.

Women suffer additional health risks. Smoking in pregnancy is dangerous to the mother as well as to the foetus, especially in poor countries where health facilities are inadequate.

Maternal smoking is not only harmful during pregnancy, but has long term effects on the baby after birth. This is often

compounded by exposure to passive smoking from the mother, father or other adults smoking.

While tobacco kills millions more than it helps, research is underway examining any possible health benefits of nicotine and also trying to find a safe use for tobacco, particularly in the field of genetic modification. The aim is to produce vaccines or human proteins for medical use, or even to clean up soil that has been contaminated with explosives.





Passive Smoking

Passive Smoking

An hour a day in a room with a smoker is nearly a hundred times more likely to cause lung cancer in a non-smoker than 20 years spent in a building containing asbestos." Sir Richard Doll 1985

The first conclusive evidence on the danger of passive smoking came from Takahashi's study in 1981 on lung cancer in non-smoking Japanese women married to men who smoked. Although the tobacco industry immediately launched a multi-million-dollar campaign to discredit the evidence, dozens of further studies have confirmed the link. Research then branched into other areas and now scientific evidence continues to accumulate.

A complex mixture of chemicals is generated from the burning and smoldering of tobacco. As a passive smoker, the non-smoker breathes sidestream "smoke" from the burning tip of the cigarette and mainstream "smoke" that has been inhaled and then exhaled by the smoker.

The risk of lung cancer in non-smokers exposed to passive smoking is increased by between 0 and 30 percent, and the excess risk of heart disease is 23 percent.

Children are at particular risk from adults' smoking. Adverse health effects include pneumonia and bronchitis, coughing and wheezing, worsening of asthma, middle ear disease, and possibly neuro-behavioural impairment and cardiovascular disease in children.

A pregnant woman's exposure to other people's smoking can harm her fetus. The effects are compounded when the child is exposed to passive smoking after birth.

secret poll for the US Tobacco Institute

"What the smoker does to himself may be his business, but what the smoker does to different matter is quite as clear as the most dangerous development yet to the viability of the tobacco industry that has yet occurred."

Proper Organization, 1978

Children exposed to passive smoking at home

[illegible]

Numbers affected by passive smoking in the USA

Infants and children

- Lung cancer 3,000
- Ischaemic heart disease 35,000 to 62,000
- Low birthweight 9,200 to 16,600
- Cot death (SIDS) 1,900 to 2,700
- Bronchitis or pneumonia in infants 150,000 to 300,000
- Respiratory effects in children
 - Middle ear infection 700,000 to 1,800,000
 - Asthma induction (new cases) 10,000 to 26,000
 - Asthma exacerbation 400,000 to 1,000,000



Passive Smoking

Passive Smoking

"An hour a day in a room with a smoker is nearly a hundred times more likely to cause lung cancer in a non-smoker than 20 years spent in a building containing asbestos." Sir Richard Doll, 1985.

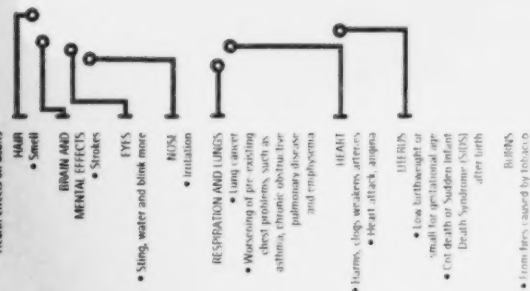
The first time-honored evidence on the danger of passive smoking came from Tak-shi Hirama's study in 1981 on lung cancer in non-smoking Japanese women married to men who smoked. Although the tobacco industry immediately launched a multi-million dollar campaign to discredit the evidence, dozens of further studies have confirmed the link. Research has been extended into other areas and now scientific evidence continues to accumulate.

A complex mixture of chemicals is generated from the burning and smoking of tobacco. As a passive smoker, the non-smoker inhales "sidestream" smoke from the burning tip of the cigarette and "mainstream" smoke that has been inhaled and then exhaled by the smoker.

The risk of lung cancer in non-smokers exposed to passive smoking is increased by between 20 and 30 percent, and the excess risk of heart disease is 11 percent.

Children are at particular risk from adults' smoking. Adverse health effects include pneumonia and bronchitis, coughing and wheezing, worsening of asthma, middle ear disease, and possibly neuro-behavioral impairment and cardiovascular disease in adulthood.

A pregnant woman's exposure to other people's smoking can harm her fetus. The effects are compounded when the child is exposed to passive smoking after birth.

Harm caused by passive smoking
Health effects on adultsHarm caused by passive smoking
Health effects on childrenNumbers affected by passive smoking
in the USA
annual 1996

Lung cancer 3,000
Ischaemic heart disease 35,000 to 42,000

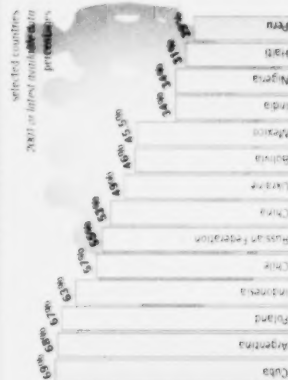
Infants and children

Low birthweight 9,700 to 18,000
Cot death (SIDS) 1,000 to 2,700
Bronchitis or pneumonia in infants 150,000 to 300,000

Respiratory effects in children

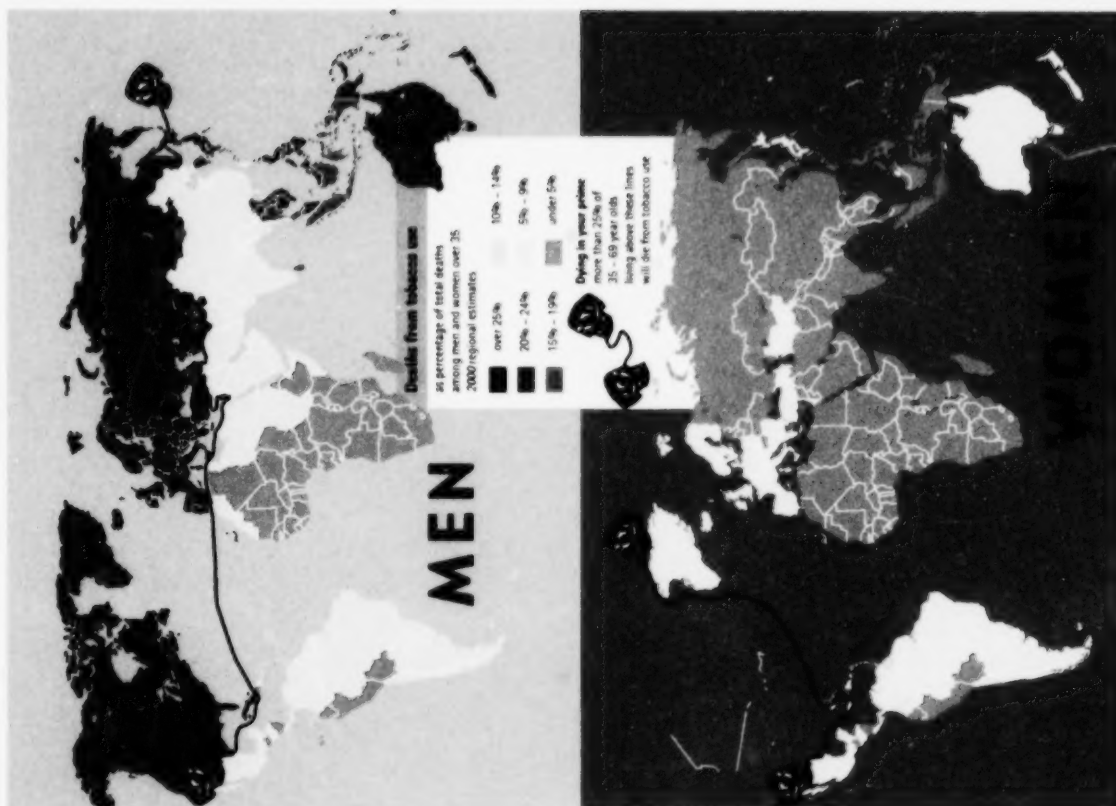
Middle ear infection 700,000 to 1,800,000
Asthma induction (new cases) 5,000 to 26,000
Asthma exacerbation 400,000 to 1,000,000

Children exposed to passive smoking at home





Deaths



"...with a general lengthening of the life expectancy of the people to die of."
Report for Tobacco Advisory Council, 1978

Deaths

Cigarettes kill half of all lifetime users. Half die in middle age, between 35 and 69 years old. No other consumer product is as dangerous, or kills as many people. Tobacco kills more than AIDS, legal drugs, illegal drugs, road accidents, murder, and suicide combined.

Tobacco already kills more men in developing countries than in industrialized countries, and it is likely that deaths among women will soon be the same.

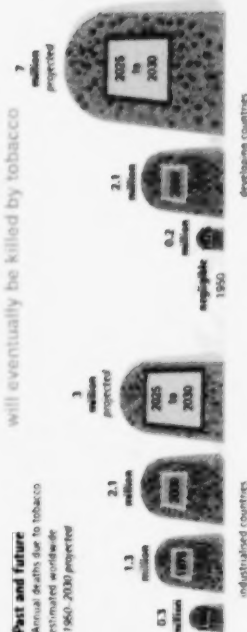
While 0.1 billion people died from tobacco use in the 20th century, ten times as many will die in the 21st century. Maternal smoking during pregnancy is responsible for many foetal deaths and is also a major cause of Sudden Infant Death Syndrome.

Passive smoking in the home, workplace, or in public places also kills, although in lower numbers. However, those killed do not die from their own habit, but from someone else's.

Children are at particular risk from adults smoking, and even smoking by other adults around a pregnant woman has a harmful effect on a foetus.

of everyone alive today
500,000,000

will eventually be killed by tobacco





Deaths



Copyright WHO Tobacco Atlas. <www.who.int/tobacco/en/atlas11.pdf>. Reproduced by permission.





Legislation: Health Warnings

Legislation: Health Warnings

"Then packaging is regulated because it influences the product imagery associated with the brand and potentially through the process of smoking and also in terms of child consumers." — Bill Cunningham and Ren Kyle, 1995

Health warnings about tobacco have been in existence for a long time. In 1965, the U.S. Food and Drug Administration (FDA) required cigarette packs to carry the warning "Smoking Causes Lung Cancer, Heart Disease, and Emphysema."

Following a similar report in the U.S., the U.K. then enacted legislation in 1968 requiring cigarette packs to carry the warning "Smoking Causes Lung Cancer, Heart Disease, and Emphysema."

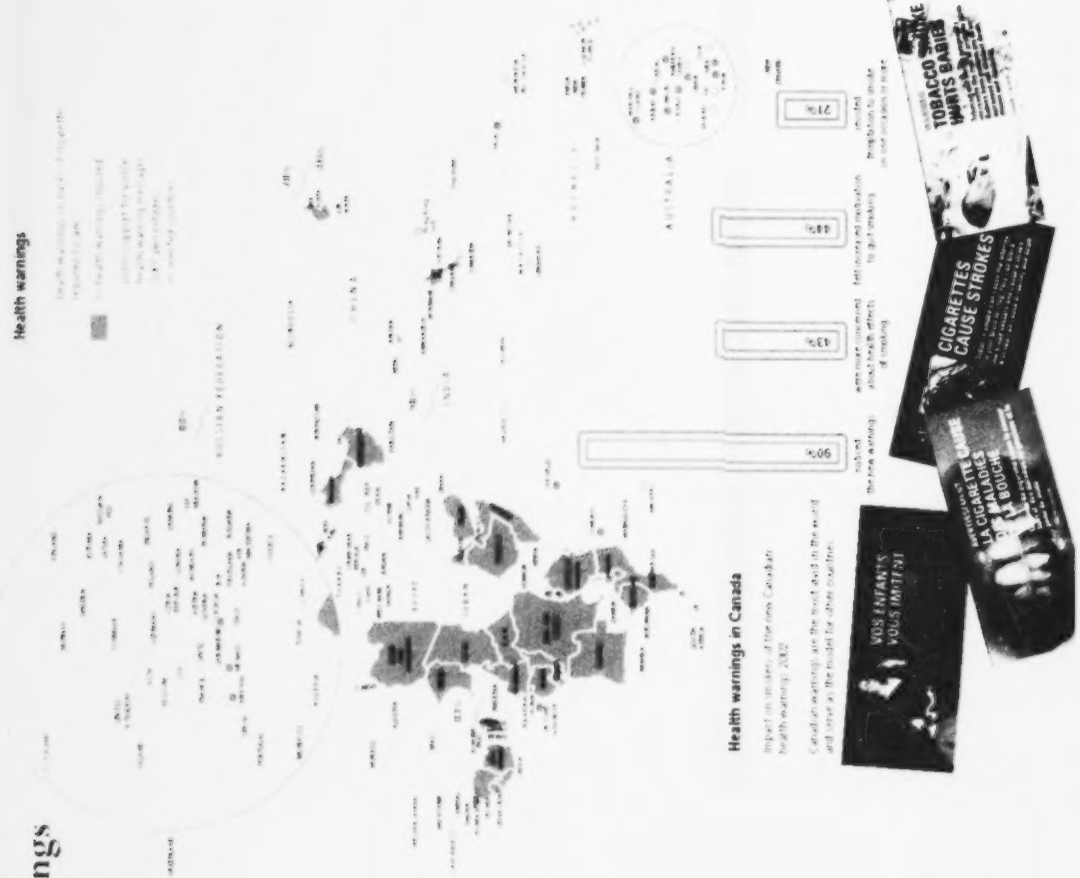
Canada's first tobacco warning was the word "Warning" in the 1970s, and it was not until the 1980s that the word "Caution" was added. In 1988, the word "Caution" was replaced by "Warning."

When Canada's tobacco warning was first introduced, it was a simple word. Over time, however, the word "Warning" was replaced by "Caution," and then "Warning" was replaced by "Caution."

By the late 1980s, the word "Warning" was replaced by "Caution," and then "Warning" was replaced by "Caution."

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Health warnings in Canada

Impact on sales of the first Canadian health warning, 2002

Canadian warnings are the first sold in the world and serve as the model for other countries.





Quitting

Quitting

"Every avoid one pack will mean 200 cigarettes and salt." *Chris Egan, ABC 10, 2003*

The main dangers of smoking decrease when smokers quit, even in those who have smoked for 30 or more years.

Smokers move through stages in relation to quitting: of pre-contemplation, contemplation, readiness then action, followed by maintenance or relapse. Many move through this cycle several times before they finally quit, while others report they found it easier to quit than they expected. These stages are influenced by increased costs from tax increases or reduction of smuggling, illness in the smoker, family or friends dying from tobacco, the media, health professions, bans on promotion, cessation of smoke-free areas and, while most smokers still quit on their own, availability of support and treatment.

If interventions only focus on prevention of initiation, and do not address cessation, then 160 million additional smokers will die before 2050 (see below)

available in all parts of the world: social support, classes, quitlines, internet sites, skills training, nicotine replacement therapy (NRT) and other pharmaceutical treatments.

If interventions only focus on prevention of initiation, and do not address cessation, then 160 million additional smokers will die before 2050 (see below)

Quitting Calendar

The benefits of stopping smoking

1 day later	Heart blood pressure, and the blood clotting factors, start to improve
1 year later	Excess risk of coronary heart disease is half that of a continuing smoker
5 to 15 years later	Risk of a stroke is reduced to that of never-smokers
10 years later	Risk of lung cancer is reduced to less than half that of continuing smokers; risks of many other cancers decrease
15 years later	Risk of coronary heart disease is reduced to about the same as the risk of death almost the same, especially if the smoker quits before illness develops

Effects of starting and quitting smoking on deaths

Total accumulated tobacco deaths 2002, 2025 and 2050 projected



Effect of smoking restrictions at home and at work

USA 1992-97 percentages



Impact of interventions on starting to smoke and quitting

Type of intervention	Quitting
More than 10th percentile	30 increase in quitting
Anti-smoking media	Increased number of attempts and success
Bans on promotion	Complete ban reduces consumption by 10%
Restrictions on youth access	no evidence
Smoking restrictions	Mark and fiscal/social restrictions most effective
NRT	Higher number of attempts to quit





Winnipeg Free Press: Smoker's Helpline and Statistics

WHAT'S IN A CALL?

All callers are immediately connected to a trained quit specialist. The one touch rule applies here as the only prompt is: 1 for English or 2 for French. During the call, guidance will be provided that is tailored, based on the caller's individual needs and goals. For example, some callers have not yet thought about making a quit attempt and are just looking for information. Other callers may be thinking about quitting but aren't sure of the appropriate steps to take, while other callers are ready to make a quit attempt and need support and guidance. In fact, callers who have already quit smoking but need some counseling to stay smoke-free are also welcome to utilize the line. In addition, an important feature of the Smokers' Helpline is that key influencers making calls to the line are welcomed, as individuals can access the line to seek advice to help a friend or loved one to quit smoking. Optional follow-up calls can be made to the caller by a trained quit specialist to keep track of the caller's progress and, more importantly, to provide support and encouragement.

The following statistics were taken from MANTRA'S (Manitoba Tobacco Reduction Alliance) Comprehensive Strategy Document.

TOBACCO USE

On a global level, the impacts of tobacco use are staggering. The World Health Organization (WHO) estimates smoking kills one person every 10 seconds, which is around 4 million deaths a year. Health Canada predicts that more than 45,000 Canadians will die due to smoking this year. Of these, more than 100 nonsmokers will die of lung cancer and at least 700 nonsmokers will die of coronary heart disease caused by exposure to second-hand smoke.

The World Health Organization indicated that in the mid 1990's, Canadian women had the 7th highest smoking rate in the world whereas Canadian men had the 73rd highest.

Ryle: I really hadn't thought about quitting until I heard about the Smokers' Helpline. So I called, just to see what it was all about. I was amazed at how supportive the quit specialist was. I'm still not ready to quit yet, but when I do quit, I know I'll call the Smokers' Helpline for help."

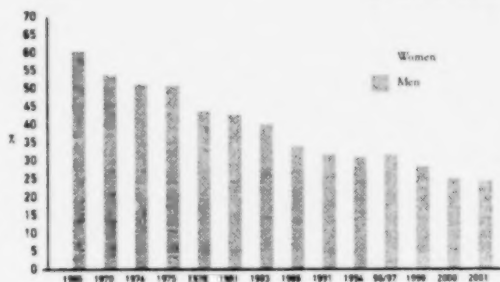
Dorothy: I had no intentions of ever quitting until last week when I was diagnosed with lung cancer. I realized I had to quit immediately. I called the Smokers' Helpline and now I'm on the road to recovery."

(continued)

Winnipeg Free Press: Smoker's Helpline and Statistics (continued)

PREVALENCE
& CONSUMPTION

Looking at the prevalence of smoking and rates of consumption in Canada quickly reveals that there is both good and bad news. As the chart below illustrates, there has been a steady decline in the overall prevalence of smoking in the last 35 years.



It is important that we recognize the gains that have been made and not allow ourselves to give credence to the idea that smoking is a "norm" amongst a majority of the population. Youth in particular appear vulnerable to overestimating the number of peers who actually smoke. What is, however, readily observable is the decline of smoking among women has not kept pace with the rate of decline among men.

Jacob: I would never call the line myself, but my buddy called and got all the support he needed to help me quit. Without me knowing, the Smokers' Helpline helped me quit."

HEALTH IMPACT

Tobacco is the leading cause of disease and preventable death in Manitoba.

The U.S. Department of Health indicates that there is no safe level of consumption. Tobacco smoke contains more than 4,000 substances, 50 of which are associated with, or known to cause cancer. In 1993, the U.S. Environmental Protection Agency classified cigarette smoke as a Class A carcinogen; a substance which has been shown to cause cancer in humans through studies on human population. There is strong scientific evidence that smoking is

related to more than two dozen diseases and conditions.

Health Canada has reported that the risk of premature death is extremely high among smokers: half of all long-term smokers will eventually be killed by tobacco, and of these, half will die during middle age, losing 20 to 25 years of life.

ECONOMIC BURDEN

Smoking is an expensive habit. Health Canada indicates that Canadian teenagers smoke more than 1.6 billion cigarettes each year—resulting in retail sales worth more than \$330 million. With Manitoba teenagers accounting for approximately 4% of the Canadian teenage population, this would mean that Manitoba teens are spending over \$13 million annually on cigarettes. Smoking rates tend to be higher amongst those who are socially and economically disadvantaged. This adds to the economic burden which they often face.

FACTS TO CONSIDER

Physicians For a Smoke-free Canada

- Coronary heart disease and stroke are 2 to 4 times more common in smokers than in non-smokers.
- Tobacco use results in 80 – 90% of all chronic obstructive pulmonary disease (COPD).
- Tobacco is responsible for 30% of all cancer deaths.
- Every 35 minutes a Canadian woman dies as a result of smoking.
- Tobacco is responsible for one in five deaths in Canada – almost five times the number of deaths caused by car accidents, suicides, drug abuse, murder and AIDS combined.

Collette: I had been thinking about quitting for quite some time now, but I really didn't know where to go for help. When I heard about the Smokers' Helpline, I gave it a try. Now I'm ready to make a quit attempt. And they're even going to call me the day before to see if I'm ready to go and to encourage me."

Benefits of Quitting Smoking

Ever wonder what happens to your body the moment you stop smoking? Within 20 minutes of smoking that last cigarette, the body begins a series of changes that continues for years.

20 MINUTES

- Blood pressure drops to normal.
- Pulse rate drops to normal.
- Body temperature of hands and feet increases to normal.

8 HOURS

- Carbon monoxide level in blood drops to normal.
- Oxygen level in blood increases to normal.

24 HOURS

- Chance of heart attack decreases.

48 HOURS

- Nerve endings start regrowing.
- Ability to smell and taste is enhanced.

2 WEEKS TO 3 MONTHS

- Circulation improves.
- Walking becomes easier.
- Lung function increases up to 30%.

1 TO 9 MONTHS

- Coughing, sinus congestion, fatigue, and shortness of breath decrease. Cilia regrow in lungs, increasing ability to handle mucus, clean the lungs, and reduce infection.
- Body's overall energy increases.

1 YEAR

- Excess risk of coronary heart disease is half that of a smoker.

5 YEARS

- Lung cancer death rate for average smoker (one pack a day) decreases by almost half.
- Stroke risk is reduced to that of a nonsmoker 5-15 years after quitting.
- Risk of cancer of the mouth, throat and esophagus is half that of a smoker's.

Reproduced from <www.geocities.com/angelescresthighway/smoking.html>. Author unknown.

(continued)

Benefits of Quitting Smoking (continued)

10 YEARS

- Lung cancer death rate similar to that of nonsmokers.
- Precancerous cells are replaced.
- Risk of cancer of the mouth, throat, esophagus, bladder, kidney and pancreas decreases.

15 YEARS

- Risk of coronary heart disease is that of a nonsmoker.

What Are Some Rewards of Quitting Smoking?

Immediate Rewards

Within 12 hours after you have your last cigarette, your body will begin to heal itself. The levels of carbon monoxide and nicotine in your system will decline rapidly, and your heart and lungs will begin to repair the damage caused by cigarette smoke.

Within a few days you will probably begin to notice some remarkable changes in your body. Your sense of smell and taste may improve. You will breathe easier, and your smoker's hack will begin to disappear, although you may notice that you will continue to cough for a while. And you will be free from the mess, smell, inconvenience, expense, and dependence of cigarette smoking.

Immediate Effects

As your body begins to repair itself, instead of feeling better right away, you may feel worse for a while. It's important to understand that healing is a process; it begins immediately, but it continues over time. These "withdrawal pangs" are really symptoms of the recovery process.

Immediately after quitting, many ex-smokers experience "symptoms of recovery" such as temporary weight gain caused by fluid retention, irregularity, and dry, sore gums or tongue. You may feel edgy, hungry, more tired, and more short-tempered than usual and have trouble sleeping and notice that you are coughing a lot. These symptoms are the result of your body clearing itself of nicotine, a powerful addictive chemical. Most nicotine is gone from the body in 2-3 days.

Long-range Benefits

It is important to understand that the long range after-effects of quitting are only temporary and signal the beginning of a healthier life. Now that you've quit, you've added a number of healthy productive days to each year of your life. Most important, you've greatly improved your chances for a longer life. You have significantly reduced your risk of death from heart disease, stroke, chronic bronchitis, emphysema, and several kinds of cancers; not just lung cancer. (Cigarette smoking is responsible every year for approximately 130,000 deaths from cancer, 170,000 deaths from heart disease, and 50,000 deaths from lung disease.)

Legislation: Smoke-Free Areas

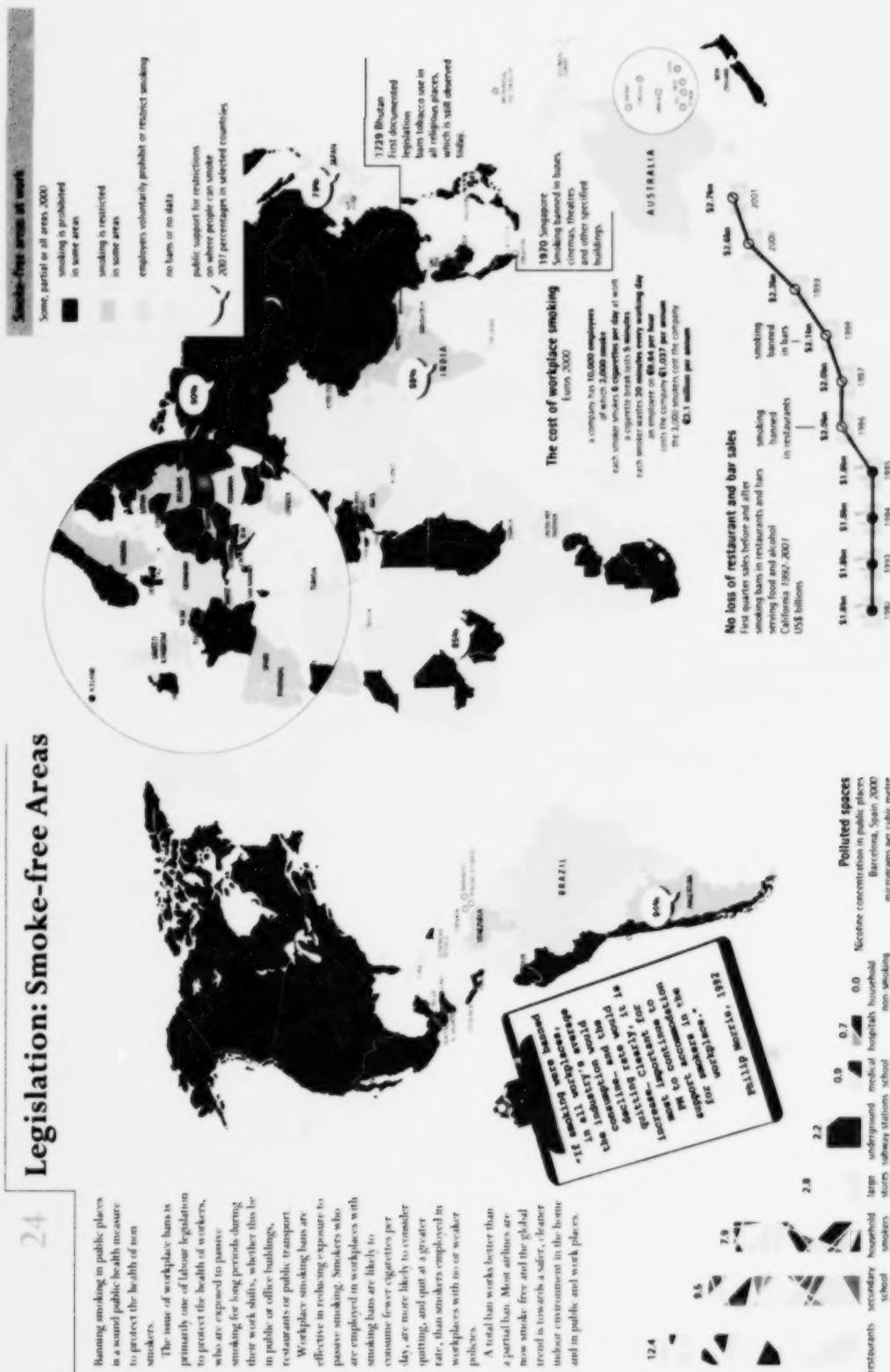
Legislation: Smoke-free Areas

Banning smoking in public places is a sound public health measure to protect the health of non-smokers.

The issue of workplace bans is primarily one of labour legislation to protect the health of workers, who are exposed to passive smoking for long periods during their work shifts, whether this be in public or office buildings.

Workplace smoking bans are effective in reducing exposure to passive smoking. Smokers who are employed in workplaces with smoking bans are likely to consume fewer cigarettes per day, are more likely to consider quitting, and quit at a greater rate, than smokers employed in workplaces with no or weaker policies.

A total ban works better than a partial ban. Most airlines are now smoke-free and the global trend is towards a safer, cleaner indoor environment in the home and in public and work places.



Benefits of Quitting Smoking (continued)

10 YEARS

- Lung cancer death rate similar to that of nonsmokers.
- Precancerous cells are replaced.
- Risk of cancer of the mouth, throat, esophagus, bladder, kidney and pancreas decreases.

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Smoking Bylaw Rolls Out across Winnipeg, September 2, 2003

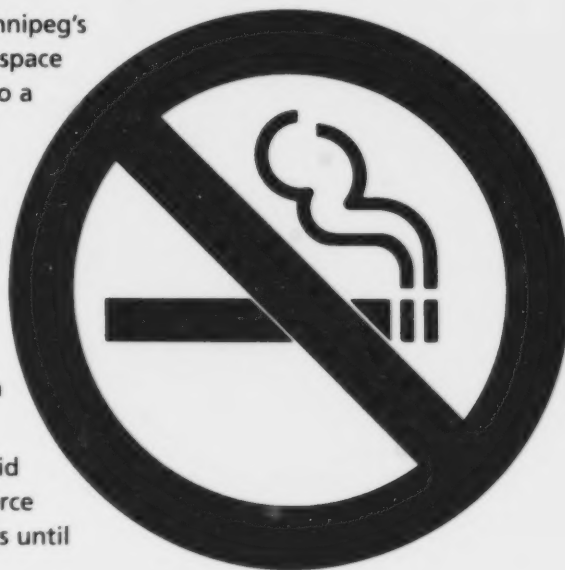
WINNIPEG – Smokers looking to light up in Winnipeg's restaurants, bars, or any other enclosed public space can now look forward to a hefty fine, thanks to a city bylaw which took effect Monday.

The bylaw covers all enclosed public places; it threatens a minimum \$100 fine on individuals who attempt to smoke and a \$500 fine for the owners of the establishment that allows them to do so.

Inspectors fanned out across the city on the holiday Monday with an eye on cracking down on the illegal smokers.

Serge Scrafield with Manitoba Conservation said the 10 provincial inspectors would be out in force Monday, but would likely put off issuing tickets until Tuesday.

"We can legally issue the ticket to either [the individual or owner]," he said. "However we would do that only if we felt the proprietor had taken all the steps that reasonably he or she could take, and if the problem still persisted then we would consider ticketing the individuals."



The province is responsible for enforcing the bylaw in 70 per cent of the city, mostly the suburbs.

The bylaw actually went into effect July 1, but the province delayed its enforcement for two months so it could hire more inspectors.

Scrafield hopes the delay may have allowed people extra time to get accustomed to the bylaw, meaning his inspectors will not have to issue too many tickets.



Town Hall Forum: Smoking Ban

The class will be divided into two groups: prospective citizens with a vested interest in a proposed smoking ban, and a town council. The citizens will receive position cards. The town council may be elected or chosen. The teacher will act as the moderator.

Directions for students with position cards:

1. Read the news article about the imposed smoking ban in Winnipeg.
2. You will perform a role-play of a historical discussion, set prior to October 1, 2004, discussing the proposed smoking ban in your community.
3. You will receive a position card stating the role you will play in the discussion about the ban.
4. Decide what your position would be on this issue.
5. Prepare an argument to support your position by brainstorming and doing research. Collect relevant notes, references, and statistics. One of your sources must be a primary source. You may also include anecdotal information.

Some ideas you might want to consider are

- the economic benefits and liabilities
 - the related health issues and costs
 - the Charter of Rights and Freedoms issues
6. Prepare your point-form notes on index cards.
 - Use statistics and direct references to current and valid information in your argument.
 - Try to speak naturally rather than read. Be ready to answer questions. Prepare for this by predicting what you may be asked.
 7. You may try to present a workable solution if you disagree with the ban.
 8. Each person should be treated respectfully.

When the forum is over, hand in your research and speaking notes, a short evaluation of the points made by the other speakers, a bibliography, and a personal reflection about the process when the forum is over.

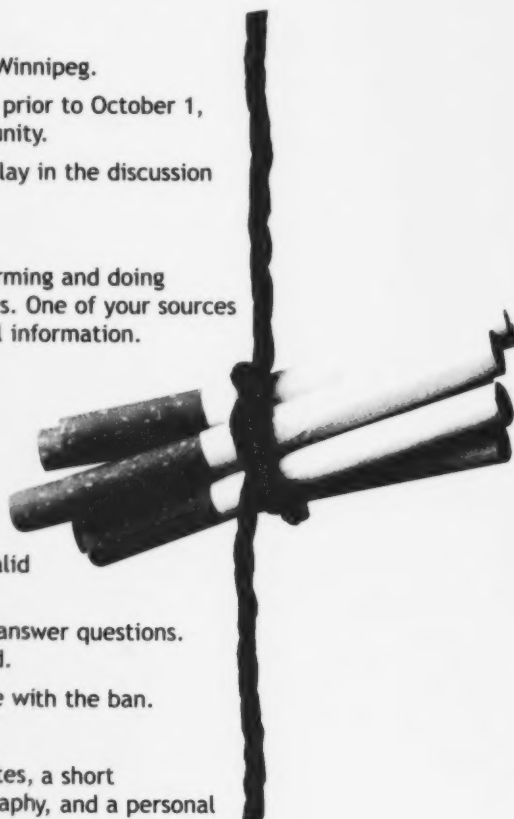
Directions for the town council:

1. You will listen to and evaluate the arguments presented.
2. You must do research and take notes on the issues involved in this debate so that you are prepared to listen actively.
3. During the debate, make notes about each speaker.
4. You may ask relevant questions.
5. After the forum is over, you will vote to decide who presented the most convincing argument. Evaluate each speaker; give one positive point and suggest one goal for future presentations like this. Discuss your choices as a group. Then, vote for the most convincing speaker.

When the forum is over, hand in your preparation notes, a bibliography, your notes on each speaker, your reasons for choosing the speaker you did, and a personal reflection about the process.

As a class, form groups of four made up of two people supporting the ban and two people against the ban. Discuss

- the process
- the pros and cons of each argument
- how the values of each interest group differ
- whether there could be ever be a viable solution that would satisfy both groups





Senior 4 ELA: EAL for Academic Success



Module 5

Global Village

This final module considers the implications of the term “global village” by examining the effects of globalization on aspects of language, sports, economics, marketing, disease, and culture. Students read, listen, and view critically; synthesize information from different perspectives; distinguish between observation and interpretation; take notes; use lexical and grammatical clues and discourse markers to determine meaning; select appropriate learning strategies; and summarize, research, and present information, viewpoints, and forecasts. They will design a marketing plan; create a statistical visual; write an essay and a short report; conduct an interview; and present research by means of role-play, debate, or panel discussion. The culminating activity requires students to move beyond their personal world to collaborate on a report and presentation on a topic of global importance.

Module 5

Global Village

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Assessment for Learning

Module 5: Global Village**Topic 1: English: Killer Language or Language of the Future?**

Assessment Target: GLO 1/2: Students' ability to develop and express a personal opinion in a written text considering audience, purpose, and context, and using the structure and language features appropriate to the text type

Assessment Task: Using notes from a number of readings and discussions to decide on their topic, students create an outline for a persuasive or argumentative essay about English as a universal language. Students write this essay of 500 to 600 words in 70 to 75 minutes. Check outline for organization, argument, and examples. Check essay for content, organization, style, and mechanics, using the rubric provided. Make anecdotal notes about students' ability to write in this set amount of time, giving suggestions for improvement. Students use these comments to improve future timed writing.

Topic 2A: Will They Be the Pandemic Diseases of the Future?: Possible Epidemics in a Global Village

Assessment Target: GLO 1/2/5/6: Students' ability to work respectfully and efficiently with others to make and communicate meaning of increasingly difficult texts with increasing independence by managing group action, refining pronunciation, and using a variety of learning strategies

Assessment Task: Students complete a Jigsaw reading activity in small groups by sharing information without the use of notes when they are speaking, and by taking notes when they are listening. Tape this interaction and collect the notes. Using a checklist, evaluate each student's participation in the taped group Jigsaw activity as well as his or her final notes. In the taped discussion, check for intelligibility, ability to express ideas clearly and accurately, evidence of the employment of useful learning strategies and respectful behaviour. In notes, check for understanding of speakers' ideas and ability to record this information in point form.

Topic 2B: Pandemic Diseases, Part Two: The Fortress for Deadly Disease Control

Assessment Target: GLO 1/2: Students engage with progressively difficult texts to interpret meaning, using their knowledge and skills related to grammatical structures, discourse features of defining, and the learning strategies of transfer, selective attention, induction/deduction, and co-operation

Assessment Task: Students work together to understand a very difficult scientific article about viruses. They note definition patterns (a review from previous modules), work through difficult terms, then try to summarize verbally the main ideas presented in the text. Tape the paired discussions for review. Check for evidence of the employment of learning strategies to solve problems and for understanding of the article and ability to communicate this understanding verbally.

Topic 3: AIDS

Assessment Target: GLO 1/4: Students' ability to compare others' positions and understandings with their personal understanding, predisposition, and experience

Assessment Task: Students write in their journals their personal response to the notion of AIDS as an individual and global issue. Check writing samples for the student's ability to compare and analyze different perspectives and experiences, and the student's use of language features that help explain, discuss, justify, conclude, or propose.

Topic 4: Culture Shock

Assessment Target: GLO 6: Students' knowledge and ability to use reading comprehension strategies

Assessment Task: After independently reading "Culture Shock: A Fish Out of Water" (Handout 5-18), students discuss answers to post-reading questions, and then identify which comprehension strategies they used from Handout 4 and which were most useful. They may also discuss orally or in their journals how their use of comprehension strategies has changed from the beginning of the course.

Topic 5: He Shoots; He Scores; He Sells: Yao Ming and His Appeal to the International Market

Assessment Target: GLO 1/5: Interpret a range of text types (i.e., TV commercial) for purpose, audience, and context, and identify common symbols of contemporary North American culture

Assessment Task: Students view and evaluate an Apple computer commercial starring Yao Ming and Mini Me by answering questions about the celebrities chosen, tactics employed by the creator, appeal to the audience, power of non-verbal communication, and target market. Check answers for appropriate interpretation of the commercial, understanding of advertising techniques employed, clear expression of ideas, and correct use of necessary language features.

Topic 6: Where Are We Going?

Assessment Target: GLO 6: Students' knowledge of and ability to use social strategies to assist in learning and to use metacognitive strategies to reflect on and evaluate their learning

Assessment Task: After reading the article "Connecting the Dots" (Handout 1), invite student feedback (oral or written) about the nature and amount of group work required in this course, and any differences between academic settings in North America and their countries of origin. Note changes in understanding of co-operation and collaboration, as well as depth of self-reflection.

Portfolio

Item	Description
21	Topic 4: Short article for student magazine on intercultural experience
22	Topic 5: Evaluation of the Yao Ming commercial
23	Videotape of one of the culminating project presentations
24	Student-selected journal entry

Assessment of Learning

Item	Description
The assessment foci for Module 5 are on the ability to differentiate perspectives, to critically respond to text, to use the English language to participate in community, and to choose and use effective learning strategies.	
1	Vocabulary test, selected from words covered in all five modules
2	Topic 2: Assessment Target: GLO 2: Students' ability to produce an extended text form necessary for subject-area tasks, taking into consideration audience, purpose, and context Assessment Task: Students synthesize information from two articles to write a report for a specified audience.
3	Topic 3: Assessment Target: GLO 4: Students' ability to use language to respond to and critique a variety of individual perspectives and to use clear and respective language while doing so Assessment Task: Students perform a role-play of a round-table discussion among various stakeholders in the issue of providing inexpensive HIV/AIDS drugs to developing countries. Use a scoring checklist to note each student's co-operative conversational skills. (Add to appendix.)
4	Topic 4: Assessment Target: GLO 5/2: Students' knowledge of and respect for different cultural experiences and increasing ability to use language features to perform language functions (i.e., reporting) Assessment Task: Students write a short article for a student magazine reporting on the experience of someone who has moved to a different culture. Check for accurate communication of the subject's experience, and student's use of indirect speech and reporting verbs.
5	Topic 5: Assessment Target: GLOs 1–6 Assessment Task: Students work in groups to either design a plan to market a star from their countries to an international market or a plan to use Yao Ming to promote the 2008 Olympics in Beijing. Plans contain a written and visual component. Develop an assessment rubric as per guidelines in the topic.

(continued)

Assessment of Learning (continued)

Item	Description
6	Culminating Project: The researched panel discussion, debate, and presentations that occur at the end of this module are an important part of the summative evaluation for this module. They may serve as a final summative evaluation for the course. Criteria for Assessment: Using the assessment criteria provided in the topic, develop a rubric for evaluating the student's performance.



Source: <www.english.com>

Topic 1

English: Killer Language or Language of the Future?

(1–1.5 lessons)

There are two parts to this topic: the first is an introduction to the module itself, and the second is a lesson about the English language and its place in a global society. Students will think about the implications of our world as a global village. They will discuss the “haves” and “have nots” in our world, and will visually create a statistical picture of who has what. They will then write a personal response to this activity. In the second part of the lesson, students will look specifically at the use of English in the world by answering some activation questions; by reading, interpreting, and sharing

information from a variety of articles; and by writing a 500- to 600-word essay on some aspect of the topic. Other academic tasks are: creating graphic organizers; creating notes; noticing discourse markers; skimming and scanning; using correct intonation and pronunciation; recognizing implications; using context to discover meaning; defining terms; describing; explaining; predicting; summarizing; asking questions, stating a point of view; quoting; comparing and contrasting; classifying; supporting an argument; illustrating and exemplifying ideas; drawing conclusions; and using an academic writing style.

Outcomes

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.2 Use several visual techniques...

SLO 4.2 Communicate effectively to work with others...

SLO 4.3 Use clear and respectful language...

SLO 6.2.7 Use elaboration...

SLO 6.2.9 Use summarization...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence**Sequence 1****Activation****Part 1: Introduction to the Module.**

Have students reflect for a moment on some of the lessons from previous modules that suggest our world is getting smaller and, according to many, becoming a global village.

Pair students and have them discuss and write notes on the following:

1. Define the term "global village."
2. Is our world a global village? Why or why not?
3. Explain some of the ideas, concerns, and interests that are shared globally.
4. List some of the technologies that make it possible for a global village to exist.

Discuss these ideas as a class. Using an appropriate graphic organizer suggested by the students, record the information and display for the duration of the module.

Language Features**Discourse Features**

definition patterns (review)
discourse markers used in discussion (review)
imperative verbs used in questions (review)

Academic Language Functions

explaining, defining

Student Learning Tasks

In pairs, discuss and write notes on the four questions presented by the teacher. (P)

Discuss ideas that you have identified. (C)

Teacher Notes and References

The term "global village" was coined by Marshall McLuhan (1964). Student definitions should reflect the idea that cultures and people around the world are merging. They should mention technological advances in transportation and communication as two of the tools that allow peoples to connect.

Outcomes

SLO 2.2 Use several visual techniques...

SLO 4.1 Use language to encourage...

SLO 4.4 Manage group action...

SLO 4.6 Respond to and critique a variety of individual perspectives...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.9 Use summarization...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Main Activity

Introduce the “have” and “have not” groups in a global village: A group of 15 to 20 people works well for this activity. Some students taking the course may be quite privileged compared to the world population as a whole; others may be not as privileged. This activity should stimulate students to think about their place in the world and to determine their responsibility to others.

Step 1: Ask students if they ever think of their place in our global village. Are they better or worse off than others? Tell them they will be taking part in an activity to help them focus on their own status in relation to that of others.

Step 2: Students sit in a circle, which represents the population of the world. Starting with question 1, have the students represent the populations of the different areas of the world. For example; the teacher says, “I need 10 percent of this circle to represent the population of Europe.” Students calculate that 10 percent of 20 is 2, so 2 students stand. Give the students the index card with the area they represent. Continue until the population of the world is represented. Have groups hold up the names of the areas they represent so that the class can visualize the breakdown of the world’s population. Have students sit down again.

Step 3: Work with the index cards created for questions 2 to 10. Without distributing the cards, read out the statistical information on each card one at a time and have students calculate the number of people needed to represent it. When the group is standing, give them the index card containing the information they represent. They must make a statement based on the question and the statistical information on their card. For example, the students given the index related to question 2 would say, “We represent 30 percent of the world’s people. We are the only people in the world who have drinking water in our homes.” As each statement is made, students should comment, make inferences, and draw conclusions. Students sit down between presenting statistics.

Continue until all the questions have been addressed. You may want to combine two or more statistics to get different visual impressions.

Language Features

Language Features

This activity requires active listening.

Note: Step 4 appears on page 12.

Student Learning Tasks

Actively listen as the teacher reads the population statistics for each region; students from the circle represent each statistic. (I)
(C)

Calculate the number of students necessary to represent the percentages read. Formulate statements from questions and statistics. (E)

Discuss each statistic and interpret. Make inferences and draw conclusions. (C)

Teacher Notes and References**Handout 5-1: "Statistics for Index Card Activity"**

The directions are for a class of 20. You will have to decide how to represent statistical percentages that only require a portion of a person. You may decide to cover up a portion of a student or have him or her bend over or squat to indicate the correct percentage. Consult students for ideas.

Materials:

- calculator, if necessary
- index cards
 - with a place name on one side and the corresponding statistical information on the other for question 1
 - with a question on one side and the corresponding statistical answer on the other for questions 2 through 10

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 4.1 Use language to encourage...

SLO 6.1.5 Use selective attention...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.5 Use deduction and induction...

SLO 6.3.2 Use co-operation...

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.9 Use summarization...

SLO 6.2.12 Use inferencing to guess the meanings...

Instructional and Learning Sequence

Step 4: After the activity is completed, have a class discussion. Ask the following questions:

1. Describe how the distribution of the world's population makes you feel.
2. Explain how the distribution of the world's resources makes you feel.
3. Determine how the world's resources could be spread more equally among the world's peoples.
4. Discuss how each individual in the "have" group might help contribute to the solution of this problem.

Language Features

Vocabulary

to describe feelings: expressive, accurate adjectives

Structures

use of imperative "task" verbs (note the use of "how" after each of the imperative "task" verbs)

Discourse Features

discourse markers for discussion (review)

Academic Language Functions

describing, explaining, discussing

Sequence 2

Roundup

Have students write a personal response to the day's activities. Students may synthesize information from the day's discussions, or they may decide on their own approach to this personal response. What must be included is their own personal plan to become involved in helping the world's global community.

Student Learning Tasks**Teacher Notes and References**

Discuss the questions presented by the teacher. (C)

Write a personal response to the day's activities. Synthesize information from the day's discussions. (I)

OR

Decide on an approach to your personal response. (I)

Outcomes

SLO 1.3 Develop and express a personal position...

SLO 1.7 Evaluate a given text...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.2 Use several visual techniques...

SLO 4.2 Communicate effectively to work with others...

SLO 4.5 Experience and consider academic texts...

SLO 6.1.2 Use organizational planning...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.4 Use note taking...

Instructional and Learning Sequence

Sequence 3

Part 2: English: Killer Language or Language of the Future?

Activation

- a) Ask pairs of students to focus on the last question from the previous day's statistics: How many people in the world speak English? Decide if it is necessary to have one common language in a global village. Is English that language? Should it be? If so, predict some of the changes that may occur to the English language as we know it. (It will grow to include even more expressions from other languages. There will be more English dialects.)
- b) Ask students to focus for this lesson by beginning to think personally about why they are studying English. Have them free-write on the topic for two or three minutes.
- c) Distribute **Handout 5-2: "Anticipation Guide: Using and Learning English."** Students complete the anticipation guide as they have in previous lessons, with appropriate introductory and ensuing class discussion.
- d) **"Is English the Universal Language?" Learning Activity**

Step 1. Start with the premise that English is considered the universal language. Look at the statistics in **Handout 5-3: "How Many People in the World Speak English?"**. Ask: Why is English considered the universal language even though Mandarin Chinese is spoken as a first language by more people? (It's the language of international business, of the Internet, the most popular second language, et cetera).

Step 2. Have students working in quads create a "pros and cons" graphic organizer and list the positive and negative aspects of having English as a universal language. What are the benefits? What could be lost? Record ideas in groups, and then share as a class.

Step 3. Ask students to read different articles about English as a universal language. Divide students into quads and assign a different article to each group. (Several Internet resources for this activity are listed. The teacher may want to replace or add to these articles.) In groups of four, students should take point-form notes about the main ideas and supporting details of their articles.

Each member of these groups of four should pair with a student from another group. One member of this pair should explain his or her information to the other, without using notes. (Speakers should use appropriate discourse markers as they move from point to point to help their listeners.) The listening student should not take notes but should listen carefully. When the speaker is finished, the listener should quickly jot down everything he or she can remember.

Repeat the activity, changing speaker and listener. Continue until each person has jotted notes about each article that has been used. Students from the original quads can then compare notes.

Note: Language Features appears on page 16.

Student Learning Tasks

a) Student pairs focus on the last question from the previous day's statistics: How many people in the world speak English? (P)

b) Free-write, for two or three minutes, about why you are studying English. (I)

c) Complete the anticipation guide (**Handout 5-2:** "Anticipation Guide: Using and Learning English"). (I)

Discuss the statistics in **Handout 5-3:** "How Many People in the World Speak English?". (C)

Working in groups of four (quads), create a "pros and cons" graphic organizer and list the positive and negative aspects of having English as a universal language. (G)

Read an article that the teacher has assigned your group. Take point-form notes about the main ideas and supporting details. (G)

Each member of the group of four, pairs up with a student from another group. One member of this pair should explain his or her information to the other, without using notes. The listener should not take notes as the speaker is speaking, but jot down notes once the speaker is finished. (P)

Repeat the activity until each student has made notes about each article. (I)

Teacher Notes and References



Handout 5-2: "Anticipation Guide: Learning and Using English"

Handout 5-3: "How Many People in the World Speak English?"

Internet Resources: See page 17



Students can be given a list of key vocabulary to learn and share with others.

Choose articles at different ability levels to allow for differentiation. The articles suggested here address a variety of topics. You may choose to add to these or use articles that better meet your goals. Students can be given a list of key vocabulary to learn and share with others.

Outcomes**Instructional and Learning Sequence****Language
Features****Vocabulary**

Teacher-chosen language: Read over the articles and choose language features you want to emphasize or review with your class. Also, you may want to give some specific language objectives for the writing task.

Discourse Features

discussion expressions to use with the anticipation guide (review) and with the Pros/Cons graphic

Academic Language Functions

explaining, describing, agreeing, disagreeing, summarizing

Note: Step 4 appears on page 18.

Student Learning Tasks**Teacher Notes and References****Internet Resources:**

"English: The Killer Language? Or a Passing Phase?" at: <www.wholeearthmag.com/ArticleBin/328.html>

"What Global Language?" at: <www.theatlantic.com/issues/2000/11/wallraff.htm>

"English in a Decline as First Language, Study Says" at: <http://news.nationalgeographic.com/news/2004/02/0226_040226_language.html>

"If You Speak English, You're a Master of Many Tongues" at: <<http://search.csmonitor.com/durable/2001/01/02/p18s1.htm>>

"Strand 2 English as a Global Language" at: <www.ifte.net/2003/program/egl.htm>

"Expert: New 'Must Learn' Language Likely to be Mandarin" at: <www.cnn.com/2004/TECH/science/02/27/future.language.ap/>

"Analysis: English Won't Be Sole Language of the Future" at: <www.usatoday.com/news/bythenumbers/2004-02-26-future-language_x.htm>

"Universal Declaration of Linguistic Rights" at: <www.linguistic-declaration.org/right-gb.cfm>

Use the map "An International Lexicon," the photo essay, and radio clips accessible from the sidebar at: <<http://wire.ap.org/APpackages/english.html>>.

Outcomes*(Continued)*

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 6.1.4 Use functional planning...

SLO 6.1.5 Use selective attention...

SLO 6.2.2 Use repetition to imitate a language model...

SLO 6.2.7 Use elaboration...

Instructional and Learning Sequence

Step 4. Have students review their notes and make sure they understand what they have been told. They may have to question other students for clarification on some points.

Preparation for Writing Activity

Ask students to review their notes and decide upon a topic they would like to write about, based on some aspect of English as a universal language. It should be a topic on which they can write an argumentative or persuasive essay. Students confirm the topic with the teacher and prepare an outline for writing, taking into consideration all the aspects of good essay writing they have learned. The essay should be 500 to 600 words.

Timed Writing

Students will write their essay in a class period, approximately 70 to 75 minutes. This writing activity is practice for exam writing. At the end of the set time, they will hand in their work for marking. They can use their outline during their writing. They should use at least three quotations from the readings.

Language Features**Discourse Features**

organizational connectors—transition markers
point-form notes—note-taking symbols
outline format
quotation integration
format of a persuasive/argumentative essay

Sequence 4**Roundup**

Give out **Handout 5-4: "English, the Universal Language?"** Read as a class, with individual students reading a sentence each out loud. Let them have fun with the reading and see who can pronounce their words correctly by using context clues. If there is time, discuss the different meanings of words understood by a listener just by where the stress is placed. Have students try to think of one sentence of their own, using words spelled the same way but with different pronunciation and different meanings.

Language Features**Pronunciation**

sounds, syllabic stress, intonation, rhythm (linkage, reduction, thought groups)

Student Learning Tasks

Review and make sure you understand your notes; ask questions for clarification. (I)

Decide on a topic for a 500- to 600-word argumentative or persuasive essay on an aspect of English as a universal language. Confirm your topic with the teacher and prepare an outline. (I)

In class, write your essay using the outline you prepared. (I)

Read Handout 4 as a class, with individuals reading a sentence each out loud. (I) (C)

Think of one sentence of your own, using words spelled the same way but with different pronunciation and different meanings. (I)

Teacher Notes and References

Give students constructive anecdotal comments for improvement on the next timed writing assignment.



Handout 5-4: "English, the Universal Language?"



There are errors in this article (bandage is capitalized; Guinea is not capitalized, etc.). Correct these or have students try to find and correct them.

Also discuss the problem of using the Internet as a source; there are often various types of errors.



Statistics for Index Card Activity

Statistics are written on one side of the card and the statistical percentage on the other.

1. What percentage of the world's people live in each world region:

Africa	12%
Asia (including the Pacific Islands)	55%
North America	5%
Latin America (including Mexico)	8%
Europe	10%
Middle East	4%
Former USSR	5%

2. What percentage of the world's people has drinking water at home? 30%

3. What percentage of the world's people knows how to read? 35%

4. What percentage of the world's people goes to bed hungry? 20%

5. What percentage of the world's people uses 80% of the world's energy? 7%



6. What percentage of the world's people uses 80% of the world's farmland? 4%

7. What percentage of the world's people is under 15 years of age? 33%

8. What percentage of the world's people is over 64 years of age? 6%

9. What percentage of the world's people has a college education? 1%

10. What percentage of the world's people speaks English? 8%

Adapted from <http://www.abc-oghs.org/group_activities.htm>.



Anticipation Guide: Learning and Using English

Directions: Rate each statement according to the strongly agree/strongly disagree continuum and explain your choices. (You may be asked to write about them on a separate piece of paper.) Then, in your group, discuss each statement; you must reach consensus on your ratings. (Optional: Ask two people outside your high school and over 19 to rate these statements. How do their answers compare with yours?)

1. It is crucial to have one common language for business.

☐ strongly disagree
☐ disagree
☐ depends
☐ agree
☐ strongly agree

2. One can become fluent in a second language without compromising the first.

☐ strongly disagree
☐ disagree
☐ depends
☐ agree
☐ strongly agree

3. In the future, if there is one universal language for business, it will be English.

☐ strongly disagree
☐ disagree
☐ depends
☐ agree
☐ strongly agree

4. If English becomes the global language of the future, other languages will die out.

☐ strongly disagree
☐ disagree
☐ depends
☐ agree
☐ strongly agree



5. When I study in Canada, I will adopt English and not use my first language as much.

☐ strongly disagree
☐ disagree
☐ depends
☐ agree
☐ strongly agree

6. I am studying English because I need it in order to be successful in my chosen profession.

☐ strongly disagree
☐ disagree
☐ depends
☐ agree
☐ strongly agree

How Many People in the World Speak English?

Q. How many people in the world speak English?

A. About one and a half billion (1,500,000,000) people spoke English at the start of the 21st century. That is one quarter ($\frac{1}{4}$) of all people on earth. More than 400 million (400,000,000) speak English as their first language. The rest speak English as a second or third language for their professional and personal lives. But English is not the world's top first language, as you can see from the following chart:

	Language	Spoken as a first language by
1st	Mandarin Chinese	726,000,000
2nd	English	427,000,000
3rd	Spanish	266,000,000
4th	Hindi	182,000,000
5th	Arabic	181,000,000
6th	Portuguese	165,000,000
7th	Bengali	162,000,000
8th	Russian	158,000,000
9th	Japanese	124,000,000
10th	German	121,000,000

Source: The Cambridge Encyclopedia of Language, 1997.

English, The Universal Language?

The English language may be universal but it can definitely be hard to learn. Ponder these lines...

- The bandage was wound around the wound.
- The farm used to produce produce.
- We must polish the Polish furniture.
- He could lead if he would get the lead out.
- The soldier decided to desert his dessert in the desert.
- A bass was painted on the head of the bass drum.
- When shot at, the dove dove into the bushes.
- I did not object to the object.
- The insurance was invalid for the invalid.
- They were too close to the door to close it.
- A seamstress and a sewer fell down into a sewer line.
- I had to subject the subject to a series of tests.

Lets face it, the English language is crazy. There is no egg in eggplant, nor ham in hamburger, neither apple nor pine in pineapple. English muffins weren't invented in England or french fries in France. Sweetmeats are candies while sweetbreads, which aren't sweet, are meat. We also wonder why quicksand works slowly, boxing rings are square and a guinea pig is neither from guinea nor is it a pig. And why is it that writers write but fingers don't fing, grocers don't groce and hammers don't ham? One goose, two geese—why not one moose, two meese? If we say teachers have taught, why don't we say preachers have praught? If a vegetarian eats vegetables, what does a humanitarian eat?



Source: <www.titus2menandwomen.org/Humor/EnglishLanguage.shtml>. Author unknown.



Topic 2A

Will They Be the Pandemic Diseases of the Future?: Possible Epidemics in a Global Village

(1.5 lessons)

In this lesson, students will look at the way we obtain information about serious diseases and will discuss the differences between fact, opinion, and sensationalism. They will read an article about certain serious and deadly diseases, past and present; their connection to animals, and a new and frightening speculation about the cause and spread of these diseases. They will focus on SARS, West Nile virus, mad cow disease, and monkey pox; and, using a Jigsaw activity, they will extract and share information about all four diseases with

classmates. Their writing assignment will be to describe one of the diseases by paraphrasing or summarizing the notes they have made. Some of the other main academic tasks are: finding relevant information; describing, explaining, and giving examples; comparing and contrasting; making notes; speaking intelligibly; stating and supporting a point of view; recognizing indicators in discourse; asking for clarification; distinguishing fact from opinion; skimming to obtain gist; and listening critically.

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 2.2 Use several visual techniques...

SLO 4.2 Communicate effectively to work with others...

SLO 5.1 Identify common themes and symbols...

SLO 6.1.5 Use selective attention...

SLO 6.2.4 Use note taking...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.9 Use summarization...

Instructional and Learning Sequence

Sequence 1

Activation

Have students examine the editorial cartoon (**Handout 5-5: "Canada's Worst Nightmare"**), and analyze and interpret it using Appendix 11. What diseases are the foci of the cartoon? (SARS, mad cow disease, West Nile virus). Discuss what the impacts, especially on Canada, have been.

Direct students' attention to **Handout 5-6: "Graphic Organizer: Exploring through Background Knowledge."** Activate prior knowledge about these three serious diseases, as well as monkey pox, by using this graphic organizer. Divide students into four equal groups and assign one disease to one member of each group. Discuss the headings on the five sides of the cube. Students will respond individually to the headings by jotting down notes based on prior knowledge and experience. They will then share their responses with the others in the group.

As a class, students will share information about the four diseases and add to their graphics. They will also discuss how hysteria and sensationalism impact on attitudes. Is scientific information always believed? Does the media always tell the truth and base its stories on pure fact? What is the effect of personal stories? Have students discuss epidemics of the past and make connections between those diseases and the ones presented in the cartoon.

Language Features

Vocabulary

epidemic, pandemic, plague; names of present and past diseases, especially mad cow disease, West Nile virus, monkey pox, SARS, Black Death, influenza of 1918, etc.
vocabulary associated with the activation questions

Structures

past, present, and future tenses
hypothetical "if" adverbial clauses
punctuation for introductory and parenthetical phrases

Discourse Features

expressions for discussion; patterns of cause/effect: e.g., If~ then~; ~ occurred. As a result~; Because~ happened~; etc.

Patterns of compare/contrast: ~ is similar to ~ because; Similarly, ~; In the same way, ~; On the other hand, ~; However, ~; In contrast, ~; etc.

Academic Language Functions

describing, explaining, summarizing

Student Learning Tasks

Examine the editorial cartoon (**Handout 5-5**: "Canada's Worst Nightmare"), and analyze and interpret it using Appendix 11. Discuss the impacts on Canada. **(I) (C)**

Working in four equal groups, assign one disease to one member of each group. Respond individually to the headings by jotting down notes. Share your responses with the others in the group. **(I) (C)**

As a class, share information about the four diseases, add information to your graphics, and discuss teacher's questions. **(C)**

Teacher Notes and References

Handout 5-5: "Canada's Worst Nightmare" political cartoon, or teacher-selected

Appendix 11: How to Analyze Editorial Cartoons

Handout 5-6: "Graphic Organizer: Exploring through Background Knowledge"



Look at causes/sources, spread of the disease, people affected, businesses affected, et cetera.

This is an opportunity to look at fact versus fiction, sensational reporting versus factual reporting, spread of information through hysteria, et cetera.

Outcomes	Instructional and Learning Sequence
SLO 1.1 Engage with increasingly difficult oral and/or visual texts... SLO 2.1.3 Use developing control of grammatical features... SLO 4.2 Communicate effectively to work with others... SLO 6.1.1 Use advanced organization... SLO 6.1.2 Use organizational planning... SLO 6.1.6 Use self-monitoring to check... SLO 6.1.8 Use self-evaluation to check... SLO 6.2.4 Use note taking... SLO 6.2.9 Use summarization... SLO 6.3.1 Use questioning for clarification... SLO 6.3.2 Use co-operation...	Activity 1 Ask students to read about present-day diseases spread in a similar way to those of the past: from animals to humans and through travel. They will learn a new theory about the spread of the Black Plague and the spread of disease today. Have all students skim Handout 5-7: "The Return of the Plagues?" individually. Then, assign students to groups of five (or an appropriate number for the way you have broken up the assigned reading). Jigsaw: Each student in each group does an in-depth reading of a determined number of paragraphs of the whole reading, making point-form notes. These students meet with students from other groups assigned to the same paragraphs and discuss their paragraphs and the notes, readjusting their notes if necessary. Students then meet with their original groups and present the material from their section WITHOUT the use of their notes. All students make notes on the whole reading. If you want to assess the discussions, give each group a tape recorder and have them hand in their recorded tape once the discussion is complete. Timed Reading: Once they are done, students are given a set time to read the complete article. This time is set by the teacher and should challenge the students. Once finished, they may add to their notes, if necessary. Discuss the article in terms of tone and content. Ask students to describe their reactions after reading it.
Language Features	Vocabulary strains, viral diseases, mutation, domesticated, lethal, transmissible, exacts, complications, carnage, mass vaccination, sanitation, mutate, contain, virulent, endemic, culprit, quarantine, haemorrhagic, immune, onslaught, lethality, effusion, dormant Word meanings: Note the meanings of "contain" and "exact" in this article. Structures Focus on word families and affixes: influenza~flu; mutate~mutation(s); lethal~lethality; transmit~transmission~transmissible; virus~viral~anti-viral; pandemic~endemic~epidemic look at essential and non-essential clauses and punctuation Discourse Features discourse markers used in the article (e.g., despite, so, therefore) Academic Language Functions explaining, evaluating, describing

Student Learning Tasks

Skim **Handout 5-7**: "The Return of the Plagues?". (I)

In Jigsaw Home Groups, each member does an in-depth reading of a determined number of paragraphs of the whole reading, making point-form notes. (G)

In Expert Groups, discuss assigned paragraphs, compare notes made and come to consensus. (G)

In Jigsaw Home Groups, each member presents his/her information. All students make notes on the whole reading. (G)

Read the complete article in the allotted time and add to your notes. (I)

Discuss the article's tone and content and describe your reaction. (G) (I)

Teacher Notes and References

Handout 5-7: "The Return of the Plagues?" or a similar article from a textbook, magazine, or other source



Highlight key vocabulary that students should know and share. A list of potential words is in the Language Features column.



Try to include timed reading where you can, as it is essential practice for students wishing to improve reading time and comprehension.

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 2.2 Use several visual techniques...

SLO 4.2 Communicate effectively to work with others...

SLO 6.1.1 Use advanced organization...

SLO 6.1.2 Use organizational planning...

SLO 6.1.3 Use directed attention...

SLO 6.1.5 Use selective attention...

SLO 6.2.4 Use note taking...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.3.1 Use questioning for clarification...

Instructional and Learning Sequence

Activity 2

Assign students to quad groups (Jigsaw, Home Group) in which each person will have a different reading. Before students read, they should skim their articles for main topics covered, practising skimming techniques.

Then, as a group, students create a common graphic organizer to be used when taking individual notes. The graphic organizer should contain subsections for each disease (see example below). As they read, they fill in their portion with point-form notes about the disease they were assigned.

Jigsaw: After the reading, students complete the whole graphic organizer by sharing information from all the readings. First, students review their notes; then, trying to use them as little as possible, they give the basic information about their diseases to the other group members. Do this one disease at a time. Instead of taking notes as others share information, students should listen actively and carefully; then, at the end of the presentation, they quickly try to write down everything they remember. The presenter will repeat the information again so that students can complete this section of the organizer. Follow the same procedure for each disease.

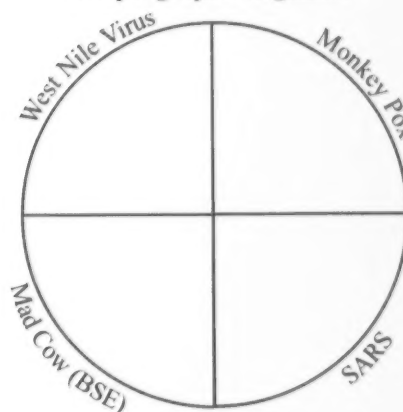
Note: Depending on time, students may compare their graphic organizers and the information they collected with other groups.

Language Features

Academic Language Functions

explaining, describing, comparing

Sample graphic organizer



Student Learning Tasks

In Home Groups of four, skim assigned articles for main topics covered, practising the skimming techniques you have learned. (I) (6)

In Home Groups, create a common graphic organizer to be used when taking individual notes. Read the assigned article and fill in your portion of the graphic organizer. (6)

Jigsaw: Review your notes then give the basic information about the disease you studied to the other group members. (I) (G)

Listen carefully to group members as they present their information. Afterwards, quickly try to write down everything you remember. (I) (6)

Teacher Notes and References

Readings on SARS, monkey pox, West Nile virus, mad cow disease, or other diseases of your choice (e.g., Lyme disease)—teacher-provided. Examples of readings are included below, but you may want to choose your own.

Suggested Readings:

SARS at: <www.cdc.gov/ncidod/sars/factsheet.htm> and <www.guardian.co.uk/sars/story/0,13036,962744,00.html>

Mad cow disease (BSE) at: <www.cfsan.fda.gov/~comm/bsefaq/html>

West Nile virus at: <www.cdc.gov/ncidod/dvbid/westnile/wnv_factSheet.htm>

Monkey pox at: <www.cdc.gov/ncidod/monkeypox/>

Additional Reading:

Lyme disease at: <www.medical-library.org/journals2a/lime_disease3.htm>

You may want to add bird flu or other diseases.

Outcomes**SLO 2.1.1** Analyze and edit texts...**SLO 2.1.2** Use standard Canadian spelling...**SLO 2.1.3** Use developing control of grammatical features...**SLO 2.3.1** Use the structures and language features...**SLO 6.1.2** Use organizational planning...**SLO 6.1.5** Use selective attention...**SLO 6.1.6** Use self-monitoring to check...**SLO 6.1.8** Use self-evaluation to check...**SLO 6.2.9** Use summarization...**Instructional and Learning Sequence****Writing Assignment**

In about 250 words, students paraphrase or summarize the information about one of the diseases, using techniques and rules of writing practised in earlier lessons.

Language Features**Vocabulary**

recycled from articles

Structures

use of present tenses to summarize information: simple present, present perfect, present progressive, as necessary

Discourse Features

transition markers

structure of a summary

Academic Language Functions

paraphrasing, summarizing

Student Learning Tasks**Teacher Notes and References**

In about 250 words, paraphrase or summarize the information about one of the diseases, using appropriate techniques and rules of writing. (I)

Canada's Worst Nightmare

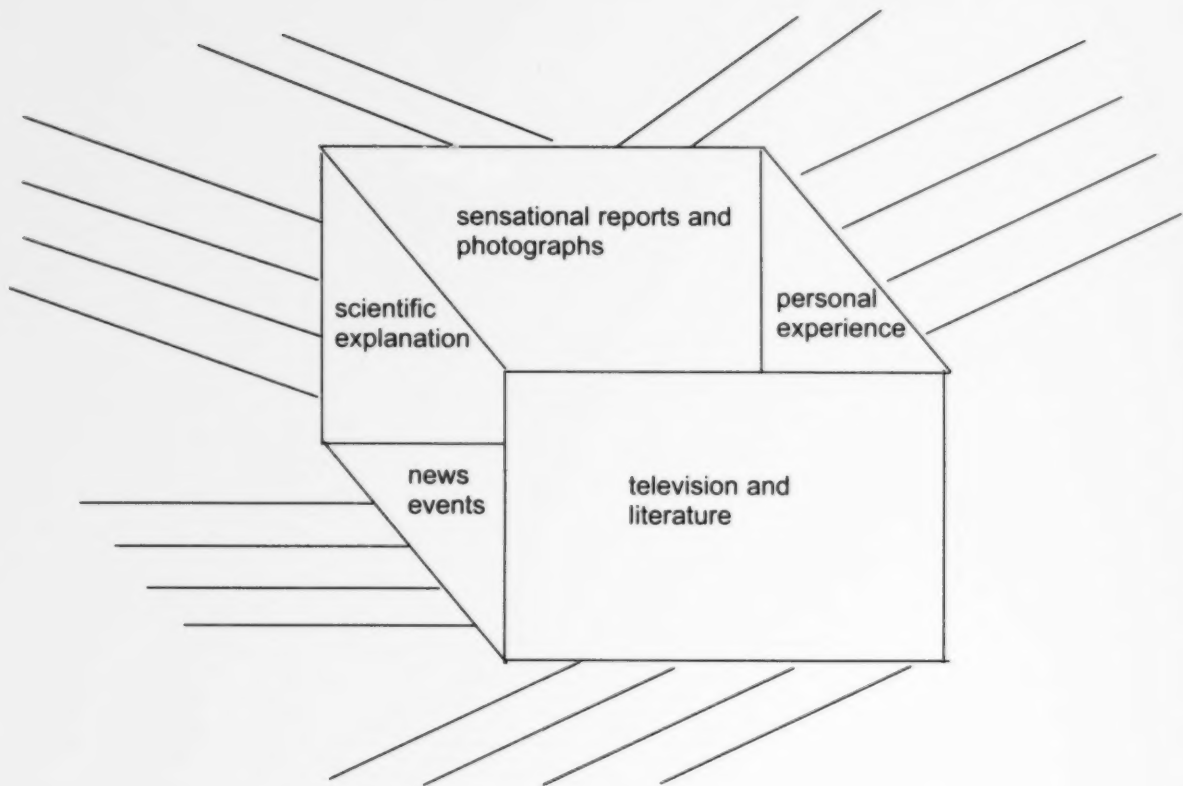
**CANADA'S
WORST
NIGHTMARE...**



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**Graphic Organizer:
Exploring through Background Knowledge**



The Return of the Plagues?

by Gwynne Dyer

21 February 2003

On 28 January an eight-year-old girl from Hong Kong visiting relatives in southern China fell ill with influenza and was admitted to hospital. A week later she died, and since then her father has died of the same flu, while her nine-year-old brother lies gravely ill in an isolation ward in Hong Kong. The virus is outwardly similar to the A (H5N1) strain, also known as "bird flu," that killed six of the eighteen people who were infected in the last outbreak in Hong Kong in 1997.

New strains of viral diseases that can kill human beings generally emerge by mutation as they hop back and forth between people and their domesticated animals. This exchange of viruses goes on all the time in farming areas—but it's only when a lethal new virus crosses the species barrier AND THEN STARTS TO PASS FROM ONE PERSON TO ANOTHER that the alarm bells start to ring. They are ringing now.

"If this virus is transmissible from human to human then it is far more serious," said a spokesperson for the World Health Organization in Geneva on 19 February. The 1997 flu virus was stopped by slaughtering the 1.4 million chickens, ducks and geese in Hong Kong, but if the new one is already loose all over southern China that solution will not really work. Even the normal wave of flu that circles the world every year, slightly changed genetically each time, exacts a serious toll in lives, but once in a while something really lethal comes along. This could be one of those times.

The "Spanish flu" pandemic of 1918 infected between 20 and 40 percent of the world's population and killed 20 million people in four months, twice as many as died in the First World War—and the majority of the victims were young, healthy people who died of complications like bronchitis and pneumonia. If a flu virus like that appeared now, could it do as much damage?

Certainly the two subsequent flu pandemics, occurring after the development of anti-viral medicines, did not cause the same carnage. The impact of the 1957 "Asian flu" pandemic was greatly reduced by mass vaccination: only one human being in six caught it, and it killed an estimated two million people worldwide. The 1968 "Hong Kong flu" pandemic killed only a million people, and as in 1957 most of the victims were elderly. But viruses are not impressed by medical technology.

Despite the far higher standards of sanitation and medical care in the developed world, influenza death rates there have not been significantly lower than in poorer countries. Viral diseases mutate fast, antibiotics are no use against them, and good hygiene is no protection either. Bacterial diseases like cholera, anthrax and malaria have complex life cycles and mutate only slowly, so they are easy to contain—but if the latest version of "bird flu" is transmissible between people, we could be looking at millions of deaths over the next year. Nor is that the worst that could happen.

The true nature of the "Black Death" was long a mystery, but early in the 20th century, after doctors had found and described bubonic plague in India, experts jumped to the conclusion that a more virulent form of that disease, endemic in rats and transmitted to humans by their fleas, was the real culprit. This was a comforting conclusion, because it meant that it was a bacterial disease with a complicated life cycle, easily contained by hygiene and antibiotics, that would never come back to trouble modern human beings.

But it never actually made sense, because the standard treatment for the Black Death, tried and tested over three hundred years, was to quarantine affected families and villages for forty days. That could not have worked if it were carried by rats, which do not respect quarantines. So two years ago professors Christopher Duncan and Susan Scott of Liverpool University suggested in their book, "Biology of Plagues," that the Black Death was really an Ebola-like virus, a haemorrhagic fever transmitted directly from person to person. It is frighteningly plausible.

(continued)

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The Return of the Plagues? (continued)

There were actually two Great Pandemics, and the first hit Europe and the Middle East in 541 AD. The Roman empire had been relatively unharmed by great plagues, apart from bouts of smallpox in 170 and measles in 250, which killed mostly children and left survivors immune, but the new plague was different. It returned about every 10 years for the next two centuries, and reduced the population of the Mediterranean area by between 30 and 50 percent. Large parts of the Middle East and North Africa did not recover their pre-540 populations until about 100 years ago.

The plague called the Black Death appeared in Mongolia in the 1320s, and killed two-thirds of China's population between 1330-50. It reached Europe in 1347, and killed between 30 and 40 percent of the population in the first onslaught. It returned at intervals of about a decade, with gradually diminishing lethality, until it disappeared at the end of the 17th century. The aching, the bleeding from internal organs, the red blotches on the skin caused by the effusion of blood under the skin, were all typical of Ebola-style fevers. Besides, bubonic plague, unlike the Black Death, did not disappear. There was an outbreak of bubonic plague in Glasgow as recently as the 1890s.

If Duncan and Scott are right, therefore, there is a virus out there somewhere, dormant for the moment while it tries out mutations that might break through the genetic defenses that human beings evolved to defeat it last time, which could kill a significant portion of the human race in a year. The Black Death is not dead, it's only sleeping. And in the meantime, the "bird flu" may be coming.



Topic 2B

Pandemic Diseases, Part Two: The Fortress for Deadly Disease Control

(1–1.5 lessons)

This lesson focuses on the topic of viruses and their characteristics. It also introduces students to Winnipeg's International Centre for Infectious Diseases (ICID). Students will read a challenging scientific article about viruses, looking at definitions, examples, and attributes. They will then read and report about the virology lab in Winnipeg. Some of the main academic tasks are: defining, exemplifying, explaining, understanding complex relations

within sentences, understanding conceptual meaning, understanding relationships between parts of a text through grammatical and lexical cohesion devices and through indicators in discourse, extracting salient points to summarize a text, making notes, making suggestions, questioning for clarification, reading critically, skimming, laying out and presenting a written report, and using an academic writing style.

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 2.1.3 Use developing control of grammatical features...

SLO 4.2 Communicate effectively to work with others...

SLO 4.6 Respond to and critique a variety of individual perspectives...

SLO 5.6 Evaluate texts...

SLO 6.1.5 Use selective attention...

SLO 6.2.4 Use note taking...

SLO 6.2.7 Use elaboration...

SLO 6.2.9 Use summarization...

SLO 6.2.12 Use inferencing to guess the meanings...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Sequence 1

Activation

Review the deadly diseases introduced in the last lesson, noting the fact that they are viruses. Ask the students to speculate on what happens in a virology lab.

Look at the definitions of "viruses" and "organism" in **Handout 5-8: "What Is a Virus?"**. Identify the definition patterns discussed in previous lessons. Note discourse markers used for exemplification. Brainstorm for others.

After looking up difficult terms, have students pair up to discuss the meanings of the definitions and the terms. They may jot down notes as they work through these difficult terms, and they should try to express them verbally in their own words to show their understanding.

Language Features

Vocabulary

virus, acellular organisms, genomes, nucleic acid, obligate, replicate, host cells, host metabolic machinery, ribosomes, pool of components, virions, virus-like agents, viroids, plasmids, prions, respire, irritability, reproduce, molechisms, organules, inadequate, essential attributes, criterion, phenomenon, lineage, unit element, evolutionary, denotes, mitochondria, chloroplasts, nuclei, chromosomes, constitute, symbiotic associations. (You may want to have students add to this vocabulary and classify words and collocations into appropriate groups, for example, science terms.)

Idioms: top-down, bottom-up

Structures

use of dashes

Suffixes: virus~virology~virions~viroids;
organ~organic~organism

Discourse Features

definition patterns (review)

markers to show exemplification: such as

Important markers: that is to say, then, however, that is, at least, now, thus

Academic Language Functions

defining

Student Learning Tasks

Review deadly diseases from the previous lesson.

Speculate on what happens in a virology lab. (C)

Look at the definitions of "viruses" and "organism" in **Handout 5-8: "What Is a Virus?"**. Identify the definition patterns. Brainstorm for others. (C)

With a partner, discuss the meaning of definitions and terms in **Handout 5-8: "What Is a Virus?"**. (P)

Teacher Notes and References

Handout 5-8: "What Is a Virus?"



The vocabulary lends itself to a review and discussion of affixes, and also a discussion about plurals of words from

Greek and other languages, like criterion~criteria, nucleus~nuclei, datum~data, et cetera, so common in science.

Ask students where they might find definitions of the difficult terms if they can't find them in the dictionary. (Here's an opportunity to look at the organization of a biology text, particularly the glossary.)

Note that a virus may adapt to a new host, just as the diseases covered in the previous lesson have.

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 1.6 Interpret a range of texts...

SLO 1.7 Evaluate a given text...

SLO 2.1.3 Use developing control of grammatical features...

SLO 4.1 Use language to encourage...

SLO 4.2 Communicate effectively to work with others...

SLO 6.1.1 Use advanced organization...

SLO 6.1.2 Use organizational planning...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.4 Use note taking...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Activity

Direct students' attention to **Handout 5-9: "Winnipeg's Fortress of Deadly Disease"** and **Handout 5-10: "Scientists Match Wits with Killers."** Group students in pairs to read the articles. First, they skim the articles by looking at the titles and headings, and by reading the introductions, conclusions, and the first and last sentences of each paragraph. (In which paragraph is reference first made to the term "virology lab"?). As they read, students should highlight the important sections and write marginal notes in their own words, synthesizing information as preparation for writing a report on the two documents.

Language Features

Vocabulary

Handout 2: flushed, Ebola virus, exotic, monolithic, epoxy, transmitted, lethal, strains, stringent, containment, impetus, authorize, contracted, sophisticated, Congolese, malaria, virology lab

Idioms/slang: turns out, stuff, no cinch, sign off/on, state-of-the-art, ass-covering, hot topics, shut down

Handout 3: bioterrorist attacks, integral, mishaps, antimicrobial resistance, bio-waste, sanitized, incinerate, redundancy, ER

Idioms/slang: at the helm, bells and whistles, cutting edge, marquée attraction, have no qualms, on the horizon

Structures

roots and affixes (e.g., transport~transported~transportation, pack~package~packaging)

Student Learning Tasks

In pairs, read **Handout 5-9**: "Winnipeg's Fortress of Deadly Disease" and **Handout 5-10**: "Scientists Match Wits with Killers." First, skim the articles by looking at the titles and headings, and by reading the introductions, conclusions, and the first and last sentences of each paragraph. Highlight the important sections and write marginal notes in your own words to prepare for writing a report based on the two articles. (P)

Teacher Notes and References

Handout 5-9: "Winnipeg's Fortress of Deadly Disease"

Handout 5-10: "Scientists Match Wits with Killers"

For more information about Winnipeg's ICID, see:

<www.icid.ca/press/01_26_04.html>

<www.icid.ca/press/10_18_04_2.html>

<http://chealth.canoe.ca/health_news_detail.asp?news_id=13940>



After pointing out roots and affixes in the articles, you may want to have students look for a set number of words in the articles and record as many forms using the base word as they can think of. They may add prefixes to change the meaning or affixes to change the part of speech. Example: secure (adj. and v.), insecure (adj.), security (n.), insecurity (n).

Outcomes	Instructional and Learning Sequence			
SLO 1.4 Show an awareness of organizational patterns...	Writing Once they are finished, students synthesize the information from both articles in their own words to write a report of about 500 words to a specified audience. The purpose of this report is to inform. (See Teacher Notes and References.) Students should: • decide on a title, organizational pattern, and subheadings • use at least three direct quotations from the article with appropriate references • find a follow-up article and refer it to their readers The report will be graded on a teacher-created rubric. Use the writing process.			
SLO 1.6 Interpret a range of texts...	<table><tr><td rowspan="10">Language Features</td><td>Structures reporting verbs (review) appropriate change of tense for reporting</td></tr><tr><td>Academic Language Functions reporting, defining, explaining, citing, informing, synthesizing</td></tr></table>	Language Features	Structures reporting verbs (review) appropriate change of tense for reporting	Academic Language Functions reporting, defining, explaining, citing, informing, synthesizing
Language Features			Structures reporting verbs (review) appropriate change of tense for reporting	
			Academic Language Functions reporting, defining, explaining, citing, informing, synthesizing	
			SLO 2.1.2 Use standard Canadian spelling...	
			SLO 2.1.3 Use developing control of grammatical features...	
			SLO 2.3 Produce a variety of short and extended text forms...	
			SLO 2.3.1 Use the structures and language features...	
			SLO 2.4 Use the steps of the writing process...	
			SLO 3.3 Quote from or refer to sources...	
			SLO 6.1.2 Use organizational planning...	
	SLO 6.1.5 Use selective attention...			
SLO 6.1.6 Use self-monitoring to check...				
SLO 6.1.8 Use self-evaluation to check...				
SLO 6.2.9 Use summarization...				

Student Learning Tasks**Assignment**

Using your marginal notes, synthesize the important information from both articles to write a report of about 500 words.

- Decide on a title, organizational pattern, and subheadings.
- Use at least three direct quotations from the article with appropriate references.
- Find a follow-up article and refer it to your readers.

Use the writing process. (I)

Teacher Notes and References

Internet Resource: "The Craft of Scientific Writing" at:

<<http://fbox.vt.edu/eng/mech/writing/other/chap1.html>> and
<<http://fbox.vt.edu/eng/mech/writing/other/chap2.html>>



The teacher can help prepare students using suggestions from "The Craft of Scientific Writing."

In scientific writing, the idea is efficiency: to transmit the most information in the least amount of reading time. The students should ask themselves:

1. Who will read the document?
2. What would readers know about the subject?
3. Why will people read this report?
4. How will they read it?

Outcomes	Instructional and Learning Sequence					
SLO 2.1.3 Use developing control of grammatical features... SLO 4.1 Use language to encourage... SLO 5.3 Analyze ways in which languages and text affect...contemporary culture. SLO 6.1.5 Use selective attention... SLO 6.1.6 Use self-monitoring to check... SLO 6.1.8 Use self-evaluation to check... SLO 6.3.2 Use co-operation...	Roundup It may be helpful to divide the many new terms from Handout 5-8: "What Is a Virus?" evenly among students and have them write new definitions in their own words, using a variety of definition patterns from this or past lessons. A master copy should be made of all definitions for each member of the class. <table><tr><td rowspan="4">Language Features</td><td>Vocabulary</td></tr><tr><td>terms from Handout 5-8: "What Is a Virus?"</td></tr><tr><td>Discourse Features</td></tr><tr><td>definition pattern (review) use of present tense in definitions Academic Language Functions defining</td></tr></table>	Language Features	Vocabulary	terms from Handout 5-8: "What Is a Virus?"	Discourse Features	definition pattern (review) use of present tense in definitions Academic Language Functions defining
Language Features	Vocabulary					
	terms from Handout 5-8: "What Is a Virus?"					
	Discourse Features					
	definition pattern (review) use of present tense in definitions Academic Language Functions defining					

Student Learning Tasks

Teacher Notes and References

Write new definitions in your own words, using a variety of definition patterns. (I)



What Is a Virus?

Viruses may be defined as acellular organisms whose genomes consist of nucleic acid, and which obligately replicate inside host cells using host metabolic machinery and ribosomes to form a pool of components which assemble into particles called VIRIONS, which serve to protect the genome and to transfer it to other cells.

They are distinct from other so-called *virus-like agents* such as *viroids* and *plasmids* and *prions*.

The concept of a virus as an organism challenges the way we define life:

- viruses do not respire
- nor do they display irritability
- they do not move
- nor do they grow
- however, they do most certainly reproduce, and may adapt to new hosts

By older, more zoologically and botanically biased criteria, then, viruses are not living. However, this sort of argument results from a “top-down” sort of definition, which has been modified over years to take account of smaller and smaller things (with fewer and fewer legs, or leaves), until it has met the ultimate “molechisms” or “organules”—that is to say, viruses—and has proved inadequate.

If one defines life from the bottom up—that is, from the simplest forms capable of displaying the most essential attributes of a living thing—one very quickly realizes that the only real criterion for life is *the ability to replicate* and that only systems that contain nucleic acids—in the natural world, at least—are capable of this phenomenon. This sort of reasoning has led to a new definition of organisms:

“An organism is the unit element of a continuous lineage with an individual evolutionary history.”



The key words here are *unit element*, and *individual*: the thing that you see, now, as an organism, is merely the current slice in a continuous lineage; the individual evolutionary history denotes the independence of the organism over time. Thus, mitochondria and chloroplasts and nuclei and chromosomes are not organisms, in that together they constitute a continuous lineage, but separately have no possibility of survival, despite their independence before they entered initially symbiotic, and then dependent, associations.

The concept of replication is contained within the concepts of individual viruses constituting continuous lineages, and having an evolutionary history.

Thus, given this sort of lateral thinking, viruses become quite respectable as organisms:

- they most definitely replicate
- their evolution can (within limits) be traced quite effectively
- they are independent in terms of not being limited to a single organism as host, or even necessarily to a single species, genus, or phylum of host



Winnipeg's Fortress of Deadly Disease

A Congolese woman lands at the airport in Toronto after a 21-hour flight that took her from Africa, via Rome and Newark, N.J., to Toronto. She couldn't eat on the flight and was weak and flushed with high fever. Doctors thought she may have had malaria, which is scary. Then they considered she may be suffering from the dreaded Ebola virus.

Turns out she probably hasn't been infected with Ebola; it's likely some other exotic disease. The results came from the new Canadian Science Centre for Human and Animal Health in Winnipeg, which contains one of the world's most secure laboratories for the testing of deadly diseases.

It is a Level 4 lab, one of 15 in the world, and the only one in Canada. The Congolese woman's blood and fluids were sent to Winnipeg for testing, also to Atlanta's Centers for Disease Control and Prevention.

Winnipeg's new virology lab—administered by Health Canada—cost \$172 million and took 10 years to design and build. It took two years to build the concrete box that encloses the Level 4 lab. They waited a year for the massive, monolithic concrete to dry, then covered it with 30 coats of special paint, then covered the walls and floor with a layer of epoxy 7.5 centimetres thick.

What distinguishes the Winnipeg lab is that it is set up for both human and animal diseases, which is of vital importance as scientists uncover more evidence of human diseases transmitted from animals. An example in the news recently is mad cow disease and its association with the human disease called Creutzfeldt-Jakob disease (CJD).

The first strains of lethal diseases arrived at the Winnipeg lab in the summer of 2000, a cargo of six of the most deadly viruses in the world. Small vials contained samples of Lassa, Marburg and Junin, with three strains of Ebola viruses, all flown in from the Centers for Disease Control in Atlanta.

But, if security requirements are so stringent, and the stuff so deadly, how is it so easily transported over great distances to the lab in Winnipeg? Dr. Ron St. John, Health Canada's executive director of the Centre for Emergency Preparedness and Response, says the vials are transported in safety packs, then secured in a triple-container and sealed.



"I would stress that these packages are designed to withstand tremendous impact," Dr. St. John explained. "In the famous Lockerbie crash the only package—the only thing to survive intact in that terrible airplane tragedy—was a safety pack that had an organism in it."

The Canadian Science Centre for Human and Animal Health in Winnipeg is located in the city's west end, on Arlington Street. Its laboratories are in four levels of containment, Level 1 being at about the safety requirements of a high school lab, Level 4 considered secure enough to test the world's deadliest viruses.

Much of the impetus for the Winnipeg lab—known locally as "the virology lab"—comes from a surge of new diseases in the 1980s, when two new strains of Ebola were discovered, and when the medical community took serious notice of the HIV-AIDS epidemic.

It is no cinch to build a Level 4 lab, and not just for design and construction challenges. A major problem is to get someone finally to sign off on the labs, which means to authorize them and guarantee that they are safe enough for the deadliest diseases in the world.

In 1976, a woman took sick at the Toronto airport and was taken to Etobicoke General Hospital where it was determined that she had contracted Lassa fever. This was enough of a scare to have the hospital shut down for a week.

(continued)

Source: <www.cbc.ca/news/indepth/background/bioweapons/winnipeglab.html>. Reproduced by permission.

Winnipeg's Fortress of Deadly Disease (continued)

The Ontario government responded by spending \$5.8 million to build a Level 4 lab in Etobicoke. But neighbours complained, the new facility was never opened, and the Ontario government decided these types of facilities are a federal responsibility.

Another high-security lab was built at Toronto General Hospital, on the 11th floor of the Norman Urquhart Wing. It was sealed off from the rest of the hospital, with its own air supply and electrical system, and a special state-of-the-art particulate filtering system. A special team was trained to work in the isolation unit, intended to handle diseases as lethal as Lassa and Ebola fevers. It was completed in 1984, at a cost of \$2 million.

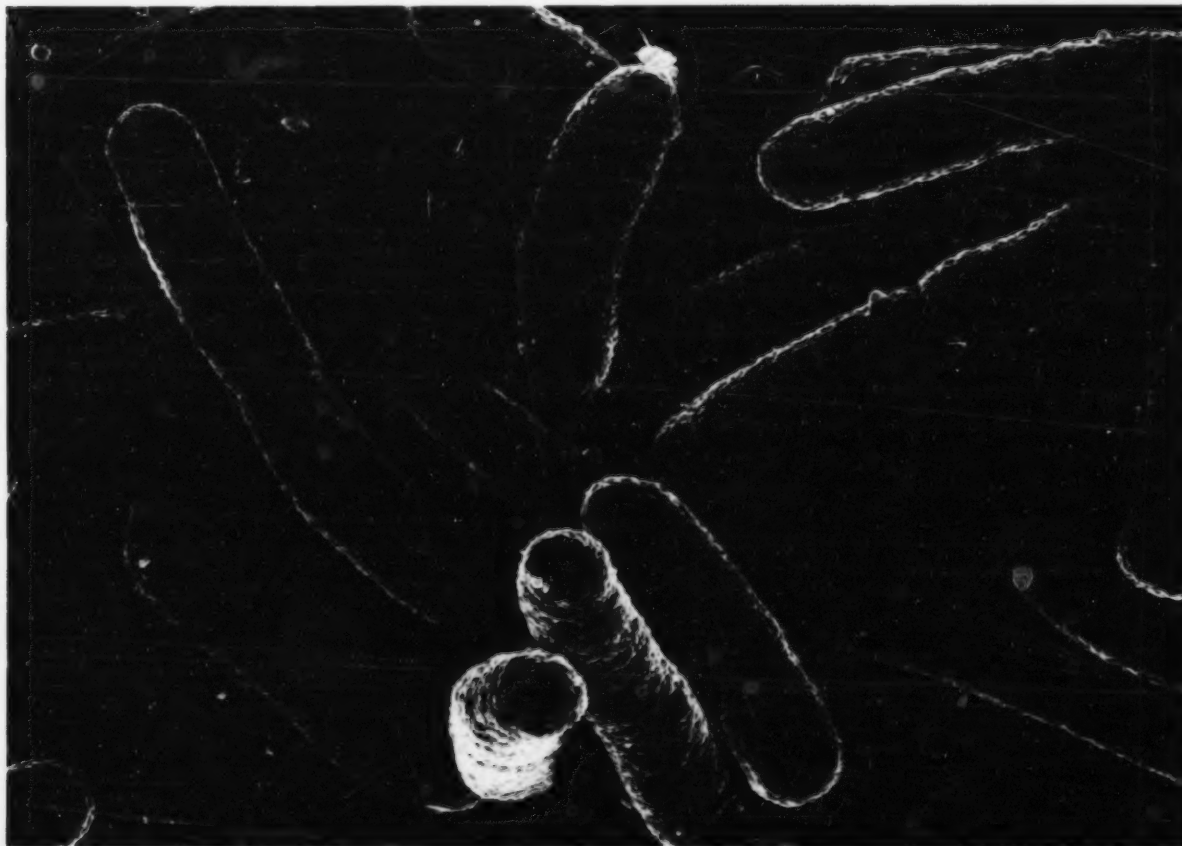
But it never opened.

Vickery Stoughton, then president of Toronto General Hospital blamed it on what he called "bureaucratic ass-covering." Stoughton said government inspectors often arrived to check the new facility, but not one was willing to sign off on the guaranteed safety of a lab dealing with the deadliest diseases in the world.

"Instead, they'd recommend that another \$100,000 or \$200,000 be spent to make absolutely sure it's safe," Stoughton said.

One afternoon in his office, Stoughton seemed particularly upset at the sophisticated new lab lying idle for two years, at a time when the hot topics were health cutbacks and cost-cutting. I was with him that day.

"Sooner or later," Stoughton told me, looking down at his telephone as if it would start ringing as he spoke, "someone's going to ask, 'Why'd you spend all that money and just let it sit there?'" I mean, *The Toronto Sun* would have a field day."



Scientists Match Wits with Killers

Some fierce warfare is taking place in Winnipeg. The enemy: killer viruses, stubborn super-bugs and bacteria.

The battlefield is the Canadian Science Centre for Human and Animal Health, a complex on Arlington Street under 24-hour guard.

Commonly called "the virology lab" by most Winnipeggers, it will also become the hub of the new nationwide laboratory network for detecting and treating bioterrorist attacks.

The federal facility is a powerhouse of impressive technology, which includes more than the microscopes and sophisticated equipment used to sequence DNA. Technology is an integral part of the science, of course, but it's also part of the safety and security processes of the building.

"It's technology, partly, and it's technique," Dr. Frank Plummer, scientific director general of the National Microbiology Laboratories within the centre, said in an interview.

"People are trained in a certain way that allows them to do their job safely."

Plummer, a leading HIV-AIDS researcher, has been at the helm of the microbiology labs since September 2000. He still works with graduate students at the University of Manitoba and delivers the occasional lecture.

"The main technology that's important here is the safety," Plummer said. "It'll allow you to work on things you otherwise wouldn't be able to."

Every employee is vetted by the Canadian Security Intelligence Service. Drills with the city's emergency services are routine. Security at the complex has always been tight, but since the terrorist attacks in the United States on September 11, 2001, it has become more visible. A security guard greets visitors at the front door.

The facility houses Health Canada and Canadian Food Inspection Agency labs. It's the only one of its kind designed to house research for both human and animal health.

It costs about \$11 million a year to operate the centre, an expense split between Health Canada and Agriculture Canada.

The lobby is the only area of the guarded facility—approved by the Treasury Board in 1987 and designed and built more than 10 years later—that is open to the public. The total building area covers the size of five football fields.

The High Efficient Particulate Air (HEPA) filtration system is used in Level 4 labs and is capable of removing particles 85 times smaller than the smallest known disease-causing agent.

The foundation of concrete pillars, embedded 30 metres into the second level of bedrock, cost \$5 million and won't shift. The building is backed by two power supplies.

It cost \$35 million to equip the labs and about \$2 million is spent annually in upgrades and additions. That amount will likely grow as programs grow, Plummer says.

"I think it's the bells and whistles, the state of the art equipment that's attracting people," said centre spokesman Brian Koshul. "Everyone wants to be on the cutting edge."

Plummer agrees: "It's the fact that it's big, it's brand new. It's got everything. People know about it."

The labs are organized in an easily reconfigurable way, to suit changing needs of different programs and the preferences of the people who work in them. For instance, a big lab can be divided into four smaller labs overnight.

More than 90 per cent of utilities maintenance can be conducted from the hallways or above the labs where panels are located, so as not to disturb the integrity or routine of lab work. This also avoids any mishaps.

Coils, condensers and electric motors are not located in the containment area where scientists work, but in outside labs, leaving more workspace for scientists and technicians.

"Something as simple as changing light bulbs can stay relatively simple," said Les Wittmeier, electrical technologist at the federal laboratories.

(continued)

Source: <<http://winnipegfreepress2.com/specialsections/technologyupdate/articles/1.html>>. Reproduced by permission.

Scientists Match Wits with Killers (continued)

This is a progressive bit of planning, because most high-end labs are not designed this efficiently.

The most sophisticated scientific work taking place in the building is connected to DNA testing. The centre has a DNA arrayer, a high-tech piece of equipment capable of placing 20,000 spots of DNA on a glass slide and reading it.

The slides are scanned for fluorescence, revealing the kind of DNA for which the scientists are looking. By studying DNA chips, researchers can test for the presence of certain genes, determine anti-microbial resistance, consider agents of bioterrorism and understand which genes are activated in particular conditions.

An experiment with a single DNA chip can provide researchers with information on thousands of genes simultaneously.

"It's the sharp end of biotechnology," Plummer said.

The "DNA court"—located within the Level 2 area—also has a robotic workstation for liquid handling. Up to 1,000 vials can be easily handled in the stacking system.

Scientists can actually make DNA here. Machines in this area of the building are capable of determining a DNA sequence automatically.

"These things are fairly common," Plummer said. "We just have more of them than anyone else."

Although the Level 4 labs, a series of pressure chambers, perform just one per cent of the centre's area, they are the marquee attraction.

Most of the centre's work takes place in the Level 2 and Level 3 labs where researchers study viruses and bacteria that make animals and humans sick. In those labs, scientists work with such things as sexually transmitted diseases, mad cow disease, salmonella, tuberculosis, flesh-eating bacteria and antibiotic-resistant organisms.

The Level 4 area is a box-within-a-box containment, sandwiched in the N-block of the complex, between the air filtering on the floor above and the bio-waste treatment system on the floor below.

In the Level 4 lab, the most sophisticated science taking place is the manipulation of deadly viruses, like Ebola. Plummer said scientists are able to change the genes around to see which ones are important in causing disease.

Bank-vault doors have key-punch locks and freezers keep specimens at -147°C , about 127 degrees colder than a home freezer. Samples are small, and kept frozen in liquid nitrogen.

When working in the Level 4 labs, scientists zip themselves into pale blue rubberized suits with sealed hoods, gloves and boots and press-lock folds. They communicate via an internal two-way radio system.

Just seven people are authorized to work in these labs and only four are permitted to work alone. Eight separate physical security checkpoints are required to gain entry. Cameras and motion detectors monitor the area.

Air coming in to the lab has already been filtered using High Efficiency Particulate Air (HEPA) filtration, removing particles 85 times smaller than the smallest known disease-causing agent. Air is HEPA filtered again, and then filtered a third time before it leaves. The breathing air that is piped into their suits is HEPA-filtered, too. A complete air change takes place every three minutes.

The HEPA air filters, which cost between \$10,000 and \$36,000 each, are not re-used. They are sanitized and destroyed after use. A crew of four people is dedicated solely to the HEPA filtration. Every air filter is backed up by at least one other filter.

"The advances in genomics and proteomics require expensive equipment that needs a lot of expertise to run and also sophisticated information handling," Plummer said.

Primary treatment of any waste takes place first in the labs, before it even leaves for the bio-waste rendering system, where all liquid and solid waste is disinfected and sterilized before it enters the city's sewer system.

Waste enters one of three 5,000-litre vessels, the kind seen in the meat-packing industry, although modified to suit the lab's needs. Waste is heated to 121°C for a minimum of 30 minutes to sterilize it.

Nothing is incinerated. All liquid and solid waste is sanitized before it leaves the building. And even if a mishap occurs—in 1999, a step was missed, and disinfected shower and slide rinse water was released into the city sewer system before it had been re-sterilized—redundancy measures are in place.

(continued)

Scientists Match Wits with Killers (continued)

The "redundant system," which includes safety measures that go beyond international standards, in effect, doubles the safety process. People who work in the complex say they have no qualms about bio-safety.

Because waste is treated first at the lab and then rendered before finally going into sewage blending when it is cooled and released into the city sewers, it is considered cleaner than any waste from residences or even hospitals.

"Personally, I feel safer working here than sitting in any ER or doctor's office," Wittmeier said. "I have no problems working here at all. It's a basic understanding of what goes on here and what needs to be done that gives me that comfort."

The bio-waste treatment area is alarmed, and monitored 24 hours a day.

"It's a critical part of the building," Wittmeier said. "It's a high maintenance system, but when you consider the alternative of incineration, it's preferable."

Wittmeier says the centre is now providing information on bio-safety systems and procedures to other organizations, such as NASA, Texas Tech University and the Center for Disease Control in Atlanta. The world is also looking to the centre for its research capabilities, Plummer says.

On the horizon, Plummer would like for the lab to build a proteomics technology platform, develop genome libraries to explore things like the susceptibility to infection, and build a program in molecular imaging.

One of the most high-tech aspects of the centre isn't the gear, but the people who work there. At least 10 of the scientists have been recruited from around the world.

"It's really the scientists that do the work," Plummer said. "You can have all the machines you want, but you need the scientists."







Topic 3
AIDS

(2–3 lessons)

This topic introduces basic vocabulary used in the discussion of AIDS as a personal health issue and an important global problem. Students critically examine messages in popular media; take a multiple choice quiz; read and interpret tables of statistics (orally

and in writing); consider audience and purpose in the choice of writing form; and research and present connections between the topic and other global concerns. They may also participate in a round-table role-play that requires the consideration of multiple perspectives on a topic.

Outcomes

SLO 1.5 Examine and interpret various visual media...

SLO 1.6 Interpret a range of texts...

SLO 2.3.3 Produce effective oral presentations.

SLO 3.1 Seek, organize, and synthesize information...

SLO 5.1 Identify common themes and symbols...

SLO 5.3 Analyze ways in which languages and text affect...contemporary culture.

SLO 5.4 Show understanding of the effect of cultural background...

SLO 5.6 Evaluate texts...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.7 Use elaboration...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Sequence 1

Activation

Media and Sex

Option A: Preparation: For a few days prior to this topic, have students examine ads in magazines for young people, or images and situations on TV or the movies, to note the use and extent of sexual images and situations in advertising and popular entertainment (e.g., beautiful women in car ads, music videos with suggestive lyrics or scenes).

Note the frequency of such imagery (e.g., the number of sexual images in one fashion magazine). Compare with the frequency of situations or statements in the same media that imply or encourage safer sexual behaviour.

OR

Option B: Compare how romantic or "sexy" scenes and situations are handled in the English media and in the media of the student's first or dominant language. What are the unspoken messages that each language's media communicate?

HIV/AIDS are discussed in several areas of the Manitoba curriculum and have global implications. Various resource and instructional options have been given to help fit the needs of the students.

Language Features

Vocabulary

media, media literacy, suggestive, unspoken. The language features for emphasis will depend on the resources used.

Discourse Features

relationship of graphics (choice, position, etc.) and message in advertisements

Academic Language Functions

inferring
expressing quantity
comparing/contrasting

Student Learning Tasks

Examine ads in magazines for young people, or images and situations on TV or the movies, to note the use and extent of sexual images and situations in advertising and popular entertainment. (I)

OR

Compare how romantic or "sexy" scenes and situations are handled in the English media and in media of your first language.

Teacher Notes and References

Popular magazines for young people (teacher-provided)

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.7 Evaluate a given text...

Instructional and Learning Sequence**Discussion**

What negative aspects of sexual behaviour do media representations usually omit (e.g., pregnancy, disease, lack of consent)? Is it the responsibility of entertainment forms to show the negative aspects?

Ask students to examine both sides of the argument here, and to support each opinion with an example or details.

Language Features**Vocabulary**

representation, negative aspects, consent

Discourse Features

expressions of opinion

expressions to give examples

Academic Language Functions

inferring

evaluating

justifying

Student Learning Tasks

Discuss: What negative aspects of sexual behaviour do media representations usually omit? (C)

Examine both sides of the argument, and support each opinion with an example or details. (C)

Teacher Notes and References

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 1.4 Show awareness of organizational patterns...

SLO 4.1 Use language to encourage...

SLO 6.1.1 Use advanced organization...

SLO 6.1.2 Use organizational planning...

SLO 6.1.4 Use functional planning...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.2.4 Use note taking...

SLO 6.2.7 Use elaboration...

SLO 6.2.9 Use summarization...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Begin a discussion about HIV/AIDS. Ask what the students know about them. (There will likely be some embarrassment or shyness.)

Give them an AIDS knowledge quiz (**Handout 5-11: "Quiz: What Do You Know About AIDS?"** or another source). Read the questions first, developing any necessary vocabulary.

Note the format of multiple-choice questions, with a stem, parallel structure in choices, and some choices that require two or more or no possibilities. Discuss the answers, especially any that were surprising.

Optional Activity

Students may scan the Live Positive website for the basic facts about HIV and AIDS. Note how the information is organized as FAQ (frequently asked questions).

Language Features

Vocabulary

acronym, AIDS, HIV-positive, bacteria, virus, malnutrition, unsanitary, immune system, gay, latex, condom, inject, transmit, symptoms, within (time)

Use clues from stems and affixes wherever possible.

Structure

format of multiple choice questions

Academic Language Functions

defining

hypothesizing

Student Learning Tasks

Discuss HIV/AIDS. (C)

Complete **Handout 5-11**: "Quiz: What Do You Know About AIDS?". (I)

Discuss the answers to the quiz. (C)

Optional: Scan the Live Positive website for the basic facts about HIV and AIDS.

Teacher Notes and References

Handout 5-11: "Quiz: What Do You Know About AIDS?" (or a teacher-prepared quiz on current facts)

Handout 5-12: "HIV: Basic Facts" (or a teacher-provided basic introduction to HIV/AIDS)

Internet Resource: Live Positive website at: <www.livepositive.ca/basics/whatisHIV.html>



Many students may have little previous exposure to factual information about AIDS.

If students need/want a more general introduction to the topic, there are many print and online resources in English. Handout 2 was designed as a resource for students.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.2 Respond to texts with increasing independence...

SLO 6.1.1 Use advanced organization...

SLO 6.1.5 Use selective attention...

SLO 6.2.7 Use elaboration...

SLO 6.2.11 Use transfer...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence**Preview Questions for Handout 3: "Understanding HIV/AIDS Trends"**

1. What statistics would be useful to determine the extent of the HIV/AIDS problem around the world or in one particular region?
2. What statistics could help predict the future of the epidemic in various regions?
3. What problems might there be in obtaining accurate information?
4. What group of people could indicate changes in the trends of the epidemic?

Read the article in small groups or as a class in order to answer the preview questions.

Language Features**Vocabulary**

anonymous, mortality, prevalence, proxy, unfeasible

From AWL: accurate, acquired, albeit, impact, incidence, instance, overall, significant, stable, trends

Structure

modals

passive voice

Discourse Features

expressions of comparison

Academic Language Functions

comparison

hypothesizing

analyzing and interpreting

Student Learning Tasks

Read the article in small groups or as a class in order to answer the preview questions. (5) (C)

Teacher Notes and References**Handout 5-13: "Understanding HIV/AIDS Trends"**

Excellent maps of the extent of HIV/AIDS are available online.



When examining statistics and trends, there are many factors to keep in mind. The reading provides an explanation of how to understand the statistics that students will examine in the next activity.

Outcomes

SLO 1.4 Show an awareness of organizational patterns...

SLO 1.5 Examine and interpret various visual media...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 2.3.1 Use the structures and language features...

SLO 4.2 Communicate effectively to work with others...

SLO 6.1.3 Use directed attention...

SLO 6.1.4 Use functional planning...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.13 Use recombination...

SLO 6.3.1 Use questioning for clarification...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Reading

Introduce one of the tables of statistics about AIDS trends. As a class, read the title and headings of the columns and rows. To make sure students understand how to extract information from the chart, choose several numbers at random and ask students to explain aloud what they mean.

With a partner, students examine the charts and write statements about the extent and trends of AIDS/HIV infection in various regions. (Each pair may be assigned one region.) Ask students: "What does this table tell us?" Share statements with the class; the class will decide if the statement is correct.

Language Features

Vocabulary

names of regions of the world, proportion, names of large numbers

Structures

modals
passive voice
comparatives

Discourse Features

markers of comparison
format of charts

Pronunciation

large numbers

Academic Language Functions

analyzing and interpreting
cause and effect
comparing/contrasting
expressing quantity

Student Learning Tasks

Read the title and headings of the columns and rows on the table of statistics. (C)

Explain aloud what the statistics mean. (I)

With a partner, examine the charts and write statements about the extent and trends of AIDS/HIV.

Share statements with the class. (P) (C)

Teacher Notes and References

Set of *PowerPoint* slides from UNAIDS website at:
<www.unaids.org/html/pub/Topics/Epidemiology/Slides02/Epicore2003_en_ppt.ppt>

These could be shown on the computer or on individual slides printed out.



The teacher resource places the statistics in tables. Ask students: What would be the difference in effect of using a bar graph (e.g., more visual, dramatic, less precise)? What is the difference between presenting data as raw numbers and percentages? (One or the other may be more dramatic and persuasive, depending on the audience and purpose.)

Outcomes

SLO 2.1.2 Use standard Canadian spelling...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 6.1.4 Use functional planning...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.2.9 Use summarization...

SLO 6.2.11 Use transfer...

SLO 6.2.13 Use recombination...

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 6.2.7 Use elaboration...

SLO 6.3.1 Use questioning for clarification...

SLO 6.3.2 Use co-operation...

SLO 1.6 Interpret a range of texts...

SLO 5.2 Analyze and use the appropriate level of formality...

SLO 5.4 Show understanding of the effect of cultural background...

SLO 5.6 Evaluate texts...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

Instructional and Learning Sequence**Writing Task**

Students write a paragraph that describes the extent of the HIV/AIDS epidemic, supported by the data given. Students may use statements from the previous activity as a basis for their paragraphs; however, they should include a topic sentence that introduces the controlling idea and use appropriate transitions between supporting details. The paragraph should emphasize the "story" or significance of the numbers, rather than the numbers themselves.

Language Features**Discourse Features**

topic sentence with controlling idea
transition markers

Academic Language Functions

describing
expressing quantity

Discussion

What is the best way to teach young people about AIDS? Classrooms? Parents? Media? Other? What messages should be communicated?

Language Features**Academic Language Functions**

solving problems
comparison/contrast
proposing solutions

Optional Writing Task

Examine one example of AIDS education intended for young people. What information does it communicate? What attitudes does it also communicate? Is the medium chosen effective for the audience and purpose? Would this text be accepted or approved of by other audiences? Why or why not?

Language Features**Discourse Features**

format of graphic book

Academic Language Functions

describing
evaluating

Student Learning Tasks**Teacher Notes and References**

Write a paragraph that describes the extent of the HIV/AIDS epidemic, supported by the data given. Emphasize the “story” or significance of the numbers. (I)

Discuss: What is the best way to teach young people about AIDS? (C)

Examine one example of AIDS education intended for young people. What information does it communicate? (C)



Internet Resource: HIV/AIDS: Stand Up for Human Rights by United Nations Development Programme. This cartoon book is available through the UNAIDS website at: www.unaids.org/en/default.asp.

Outcomes	Instructional and Learning Sequence												
SLO 2.3 Produce a variety of short and extended text forms... SLO 3.1 Seek, organize, and synthesize information... SLO 3.2 Develop and implement a plan for researching... SLO 3.3 Quote from or refer to sources... SLO 5.7 Select and present ideas...keeping in mind the intended audience. SLO 6.1.5 Use selective attention... SLO 6.2.1 Use resourcing to access... SLO 6.2.5 Use deduction and induction... SLO 6.2.7 Use elaboration... SLO 6.3.1 Use questioning for clarification...	Optional Research Task Why is the topic of HIV/AIDS included in a unit on globalization? Students can research the connections between HIV/AIDS and factors such as poverty, global security, world travel, urbanization, human rights, education, economic disparity, economic and social development, human mobility, and government responsibility. Handout 5-14: "World AIDS Summit Warns of Challenges Ahead" and Handout 5-15: "Diseases Go Global" can help students begin this research. Students can present their findings orally or in writing. <table border="1"> <thead> <tr> <th>Language Features</th> <th>Academic Language Functions</th> </tr> </thead> <tbody> <tr> <td></td> <td>explaining</td> </tr> <tr> <td></td> <td>connecting</td> </tr> <tr> <td></td> <td>analyzing and interpreting</td> </tr> <tr> <td></td> <td>synthesizing</td> </tr> <tr> <td></td> <td>inferring</td> </tr> </tbody> </table>	Language Features	Academic Language Functions		explaining		connecting		analyzing and interpreting		synthesizing		inferring
Language Features	Academic Language Functions												
	explaining												
	connecting												
	analyzing and interpreting												
	synthesizing												
	inferring												

Student Learning Tasks

Use **Handout 5-14**: "World AIDS Summit Warns of Challenges Ahead" and **Handout 5-15**: "Diseases Go Global" to begin your research. Present your findings orally or in writing. (1)

Teacher Notes and References

Handout 5-14: "World AIDS Summit Warns of Challenges Ahead"

Handout 5-15: "Diseases Go Global"

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 3.1 Seek, organize, and synthesize information...

SLO 3.2 Develop and implement a plan for researching...

SLO 4.2 Communicate effectively to work with others...

SLO 5.1 Identify common themes and symbols...

SLO 5.2 Analyze and use the appropriate level of formality...

SLO 5.3 Analyze ways in which languages and text affect...contemporary culture.

SLO 6.1.1 Use advanced organization...

SLO 6.1.4 Use functional planning...

SLO 6.1.5 Use selective attention...

SLO 6.1.7 Use problem identification...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.9 Use summarization...

SLO 6.2.11 Use transfer...

SLO 6.3.2 Use co-operation...

SLO 1.3 Develop and express a personal position in a variety of ways...

Instructional and Learning Sequence**Round-table Role-Play**

Providing inexpensive drugs to combat AIDS in developing countries.

a) Assign students the role of spokesperson for:

- a major pharmaceutical company that has invested millions on research and development of AIDS drugs
- the government of a poor country
- a non-governmental organization (NGO) working to coordinate AIDS campaigns around the world
- the government of a wealthy country

b) Each group has different interests and constraints, and is particularly concerned with who should take financial and administrative responsibility.

c) Students will research the concerns of each group and, to some degree, those of the other parties involved, in order to present their viewpoint and negotiate a solution at a summit sponsored by the United Nations.

Language Features**Discourse Features**

- expressions of opinion and hedging
- expressions for agreeing/disagreeing
- expressions of negotiation

Academic Language Functions

- explaining
- discussing
- justifying
- concluding
- proposing solutions

Sequence 2**Roundup**

As a journal entry, have students write their personal response to the issue of AIDS as an individual and global issue.

Student Learning Tasks

- a) Round-table role-play: Each student will be assigned a role as a spokesperson for a specific organization to discuss the issue of providing inexpensive drugs to combat AIDS in developing countries.
- b) Research the concerns assigned to each group. Each group has different interests and constraints, and is particularly concerned with who should take financial and administrative responsibility. (6)
- c) Present your viewpoint and negotiate a solution at a summit sponsored by the United Nations. (6)

In your journal, write a personal response to the issue of AIDS as an individual and global issue. (1)

Teacher Notes and References

Globalization 101 website at:
<www.globalization101.org/issue/health/3.asp>



Instructions for conducting the summit meeting may be found at the Globalization 101 website.



Quiz: What Do You Know About AIDS?

PARADE
classroom[®]
TEACHER'S GUIDE

Skills Sheet

NOVEMBER 30 DECEMBER 6 2003 • PAGE 5

What Do You Know About AIDS?

A recent United Nations report found that young people are dangerously uninformed about AIDS. Are you? Take this test to see just how much you know. Afterward, your teacher will share the answers with you.

- AIDS is:
 - an illness.
 - a type of bacteria.
- AIDS is caused by:
 - malnutrition.
 - a virus.
 - unsanitary living conditions.
- AIDS attacks the immune system. The immune system:
 - builds muscle.
 - builds bone.
 - protects the body from disease.
- AIDS affects only gay people.
 - true
 - false
 - only gay men
 - only gay women
- You can get AIDS by:
 - kissing someone with AIDS.
 - having sex with someone with AIDS without properly using a latex condom.
 - sharing needles to inject drugs with someone who has AIDS.
 - both b and c.
 - all of the above.
- You also can get AIDS:
 - by sharing food with someone who has AIDS.
 - by being bitten by an infected mosquito.
 - by hugging someone with AIDS.
 - from a toilet seat.
 - in none of these ways.
- A person who looks healthy:
 - has the HIV virus.
 - couldn't possibly have the HIV virus.
 - might or might not have the HIV virus.
- The only way to know for sure if someone has the HIV virus:
 - is through medical tests.
 - is by looking at them.
- You can't get AIDS from having sex just once.
 - true
 - false
- Using a latex condom:
 - provides 100% protection against AIDS.
 - provides a lot of protection against AIDS but not 100%.
- Can an HIV-positive mother transmit the virus to her unborn child?
 - yes
 - no
- Sometimes a person's decision-making in sexual situations is influenced by:
 - drugs.
 - alcohol.
 - either a or b.
- A person infected with HIV might show signs of it:
 - within several weeks.
 - within a year or two.
 - in 10 years.
 - any of the above.
- Right now:
 - there is a cure for AIDS.
 - there is no cure for AIDS.
 - there are drugs that help many, but not all, infected people control their symptoms.
 - both b and c.
- How many people around the world get infected with HIV each day?
 - less than 1000
 - more than 5000
 - more than 10,000
 - more than 15,000
- HIV infection rates are growing fastest among:
 - gay men.
 - women and teenagers.
 - middle-aged men.

Source: <www.paradeclassroom.com>.



HIV: Basic Facts

What is HIV?

"HIV" stands for Human Immunodeficiency Virus:

- Human: means it affects humans only.
- Immunodeficiency: means that something is deficient, or there is not enough of it, in the immune system.
- Virus: is a very small germ that infects someone and can be spread from one person to another.

HIV is the virus that causes AIDS.

How does your immune system work?

Normally, your immune system helps protect you from germs and infections—like cancer, bacteria, parasites, fungi, and viruses—that can make you sick. It also keeps you from getting some diseases more than once, like chicken pox or the measles.

Your immune system works throughout your whole body. Some examples of your immune system at work include:

- Skin: keeps all kinds of germs and bacteria out of your body.
- Saliva: contains things called enzymes that can kill some germs.
- Nostrils: have hair and mucous that filter the air you breath. They keep germs from getting in your body.
- Vagina, penis, anus, and bowels: contain mucous to protect the body from infection.

What is a virus?

A virus is a germ that makes copies of itself within the cells of a person it infects. It usually makes you sick in some way. A virus is different from other kinds of germs. Bacteria, for example, can grow on their own. A virus can't. Viruses need to get inside a living cell and take it over. Once a virus is inside a living cell, the virus can make copies of itself.

Your immune system kills most viruses before they can make you sick, or before they can do a lot of damage to your cells.

How does the virus called HIV work?

HIV is different from other viruses because it gets inside some of the cells in your immune system.

Those cells are called CD4 cells, which are also known as T4 cells or T cells.

The job of CD4 cells is to watch out for viruses as they enter your body. CD4 cells send a message to the rest of your immune system to help fight the virus. But HIV uses CD4 cells to grow, which means those cells can't do their job. And that means your body doesn't have part of its immune system.

When HIV gets into a CD4 cell, it goes right into the cell's DNA. HIV takes control of that cell, so the cell starts making new copies of HIV. This process is called replication.

First, the HIV in the CD4 cell produces new HIV proteins. Next, these proteins leave the CD4 cell to go and infect other CD4 cells. HIV uses an enzyme called protease to help spread it to other cells.

Once HIV has infected CD4 cells, it usually kills the cells. If you have HIV, this process happens billions of times a day. At the same time, your immune system tries to kill the infected CD4 cells and makes new CD4 cells to replace the ones that are infected. But as you can imagine, HIV soon infects these new cells, too.

If you have HIV, your CD4 cells can't do their normal job of protecting you from viruses, so you are at a much higher risk of getting infections and other diseases.

A doctor can use a blood test to count the number of CD4 cells per cubic millimetre (mm³) in your blood. In HIV-negative adult men, the normal CD4 cell count is 400-1200 cells/mm³. In HIV-negative adult women, the normal CD4 cell count is 500-1600 cells/mm³. The CD4 count is important in HIV positive people because it shows how much damage has been done to their immune system. It's important to note that test results can vary from one lab to another.

How do you get HIV?

HIV likes wet things, so it lives in body fluids. HIV can be passed from an infected person to someone else through body fluids such as:

- semen/sperm
- vaginal fluids
- blood
- breast milk

(continued)

HIV: Basic Facts (continued)

If HIV-infected body fluids get into your body, you might get HIV. That's why doctors and nurses wear rubber gloves when they give needles or perform operations. It's also why you should never share needles with someone else and why you need to use a condom when you're having sex.

These are the ways you can get HIV:

- Having **unprotected sex** with an HIV positive person (that means not using a condom during vaginal, anal or oral sex).
- **Sharing needles**, whether you're injecting drugs or getting a tattoo or piercing.
- Having **open cuts and sores** on your body come into contact with an infected person's blood or semen.
- Being **born to an HIV positive mother**—infection can occur in the womb, during birth or through breast milk.
- Playing blood games, such as "chicken" or "blood brothers."

Can I get HIV from kissing someone?

Even though HIV likes wet things, you can't get HIV by simply kissing someone who is infected with HIV. You also can't get HIV from:

- saliva
- sweat
- tears
- shaking hands
- sharing towels
- swimming pools
- telephones
- toilet seats
- biting insects, like mosquitoes

How do you know if you have HIV?

It's hard to tell. Most people don't know that they have been infected with HIV for some time after getting it. It can take up to three months before it shows up on a blood test.

Sometimes HIV infected people feel sick, like they have the flu, with a fever, headache and sore throat, before they actually test positive for HIV.

But so many people who have HIV don't know it.

Sometimes it can take years before a person finds out. Some people only find out if they start getting sick a lot more often and go to a doctor to find out why.

You can't tell by just looking at someone that they are infected with HIV.

What does it mean if you are "HIV positive"?

When you are tested for HIV, and the test results are positive, you are "HIV positive." Once you are infected with HIV, it's just a matter of time before you become "HIV positive."

When you are HIV positive, your immune system has gone through a process called seroconversion. Seroconversion means that your immune system has created antibodies to HIV.

An HIV test looks for these antibodies. It might take a few months after being exposed to HIV for your body to start making these antibodies. But once you do, you will get a positive result on an HIV test.

How do you find out if you are HIV positive?

Only a doctor or other health care professional (like a nurse) can tell you for sure if you are HIV positive.

The doctor will do a blood test to see if your body is making antibodies. If your body is making antibodies to HIV, it means you are infected with the virus. Once you test positive for HIV, you will always test positive for the virus.

What happens to your body when you're HIV positive?

If you are HIV positive, the virus creates billions of new HIV viruses in your body every day. Your body's reaction to infection is to produce billions of cells to fight HIV.

HIV, however, takes every chance it can to reproduce faster than the body can attack it. Your immune system may get weaker or become overactive. Either way, your immune system is out of balance. HIV starts a process that can be very hard to stop once it starts.

With a weak immune system, you can get infections and cancers more easily. Most people with HIV end up with AIDS.

How do you know if your HIV disease is changing or getting worse?

Your doctor will keep track of your HIV disease with blood tests. That way, the doctor can tell if your HIV

(continued)

HIV: Basic Facts (continued)

is getting worse and your immune system is getting weaker. These tests also can tell your doctor if you have Opportunistic Infections or AIDS-Related Complications.

To measure the progression of your HIV disease, your doctor will probably do:

- **CD4 Count Test:** this test tracks how much damage has been done to your immune system. It should be done every three to six months, or if you have a low CD4 count, it probably will have to be done more often. It's better to have a high CD4 count than a low CD4 count.
- **Viral Load Test:** this test measures the number of copies HIV has made in your blood and shows how much damage HIV could do to your body in the future. Your viral load tells you how far your HIV disease has progressed. It's better to have a low viral load than a high viral load.

Your doctor will probably also do tests to check your general health and to see if you have any opportunistic infections or co-infections.

- **Biopsy:** a small sample of skin, muscle, lymph node, or even organ is removed from your body and examined under a microscope for disease.
- **Complete Blood Count (CBC):** this shows how well your blood cells are working. Blood cells help your body run properly.



- **Culture:** a sample of body fluids or tissues are tested to find out if they contain any germs that might make you sick.
- **Imaging tests:** these tests include X-rays, computerized tomography (CT or CAT scans) and magnetic resonance imaging (MRI scans). All create pictures of the inside of your body. They let doctors see infections, tumours and broken bones.
- **Liver Function Test:** this test shows how well your liver is working and whether it has been damaged.
- **Scope:** a really thin, flexible tube that goes inside your body. Doctors can look through it to see if there's anything wrong with an organ or some tissues. They can also take samples with it.
- **Stain:** this is just like a culture. Your doctor might take a sample of blood, stool, mucus, urine, sputum (fluid coughed up from your lungs), phlegm, spinal fluid or tissue from you, stain it with some dye and look at it under a microscope for germs.
- **Tuberculosis (TB) Test:** this test may be done once a year because you are at a higher risk of getting TB if you have HIV. Tuberculosis is a really serious lung disease that makes you cough and have trouble breathing.

HIV and Pregnancy

Right now, four out of every 10,000 pregnant women in Canada are HIV positive. Many of these women find out about their HIV when they are pregnant because many doctors now test for the virus.

In the past, many babies born to HIV positive women also got the disease. Now, very few women who are getting the right care pass the virus on to the baby. The baby can get HIV during the pregnancy, during delivery and from breast milk. If a mother knows she has HIV, she can take anti-HIV drugs, have a Caesarean Section (an operation to take the baby out) and not breastfeed. All of these steps greatly reduce the risk of passing the virus onto the baby.

When someone is pregnant, they should get an HIV test. While it might be scary to get the test, it's really important for both a woman's health and the health of the baby.

(continued)

HIV: Basic Facts (continued)

Is there a cure for HIV?

There is no cure for HIV. Right now, once you get HIV, you have it for the rest of your life. Scientists are working really hard to cure HIV and AIDS. They're also working on a vaccine to keep people from getting HIV.

People who have HIV can live a long time and stay healthy for many years. There are several treatments that can slow down HIV. Some people on these treatments feel very healthy and can fight off the virus for a long time. That's why it's really important that anyone who has HIV—or even thinks they might have it—should see a doctor and consider getting treatment.



Understanding HIV/AIDS Trends

The most common measure of the HIV/AIDS epidemic is the prevalence of HIV infections among a country's adult population—in other words, the percentage of the adult population living with HIV. Prevalence of HIV provides a good picture of the overall state of the epidemic. Think of it as a still photograph of HIV/AIDS. In countries with generalized epidemics, this image is based largely on HIV tests done on anonymous blood samples taken from women attending antenatal clinics.

But prevalence offers a less clear picture of recent trends in the epidemic, because it does not distinguish between people who acquired the virus very recently and those who were infected a decade or more ago. (Without antiretroviral treatment, a person might survive, on average, up to nine to 11 years after acquiring HIV; with treatment, survival is substantially longer.)

Countries A and B, for example, could have the same HIV prevalence, but be experiencing very different epidemics. In country A, the vast majority of people living with HIV/AIDS (the prevalent cases) might have been infected five to 10 years ago, with few recent infections occurring. In country B, the majority of people living with HIV/AIDS might have been infected in the past two years. These differences would obviously have a huge impact on the kind of prevention and care efforts that countries A and B need to mount.

Similarly, HIV prevalence rates might be stable in country C, suggesting that new infections are occurring at a stable rate. That may not be the case, however. Country C could be experiencing higher rates of AIDS mortality (as people infected a decade or so ago die in large numbers), and an increase in new infections. Overall HIV prevalence rates would not illuminate those details of the country's epidemic.

So a measure of HIV incidence (i.e., the number of new infections observed over a year among previously uninfected people) would help complete the picture of current trends. Think of it as an animated image of the epidemic.

The problem is that measuring HIV incidence is expensive and complicated—to the point of it being unfeasible at a national level and on a regular basis in most countries.

None of this means, however, that recent trends are a mystery. Regular measurement of HIV prevalence among groups of young people can serve as a proxy, albeit imperfect, for HIV incidence among them. Because of their age, young people will have become infected relatively recently. Significant changes in HIV prevalence among 15- to 19-year-olds or 15- to 24-year-olds can therefore reflect important new trends in the epidemic.

The steadily dropping HIV prevalence levels in 15- to 19-year-olds in Uganda, for example, indicate a reduction in recent infections among young people, and provide a more accurate picture of current trends in the epidemic (and, in this instance, of the effectiveness of prevention efforts among young people).

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<www.Unaids.org/Unaids/EN/Resources/Epidemiology/Understanding_HIV_Trends.asp>.



World AIDS Summit Warns of Challenges Ahead

The Fourteenth International Conference on AIDS, held in Barcelona, Spain from July 7-12, 2002, warned that the HIV/AIDS epidemic is the greatest threat to global health today. According to figures released at the summit, 60 million people have been infected and 22 million people have died from AIDS since its identification in the 1980s, with a further 68 million people projected to die from the disease by 2020.

Summit participants, including government representatives, non-governmental organizations, youth activists, business groups, and statesmen such as Kofi Annan, Nelson Mandela, and Bill Clinton, called for more funding, with the United Nations Joint Program on HIV/AIDS (UNAIDS) and the United Nations Development Program (UNDP), declaring \$10 billion annually a desirable and achievable figure.

Nevertheless, the summit's funding recommendation was criticized by various interest groups. Developing countries and non-governmental organizations, such as the Catholic Aid Agency (CAFOD), argued for increasing funding levels higher than the \$10 billion proposed. They also pointed out that the problem of lack of funding to tackle AIDS is compounded by the UN Global Fund's failure to distribute any money since its creation in January 2002 in the fight against AIDS, TB, and malaria despite announcing \$1.6 billion in grants to 40 developing countries.

Critics also linked fighting HIV/AIDS to other issues. For example, Oxfam argued that developing countries would be able to fund their own prevention, education, and healthcare projects if they were not burdened with huge debt repayments to the developed world. The World Food Program (WFP) and the Food and Agriculture Organization (FAO), meanwhile, noted that well-nourished people are better able to survive the disease and that treating people for HIV/AIDS and then having them die of starvation would be a tragedy. Others said that developing countries would be better served by the elimination of tariff barriers by Western countries and freedom to use WTO provisions on national health emergencies

and compulsory licensing of patents to produce cheaper drugs to treat the epidemic.

Indeed, the disease's links to other issues such as development, productivity, education, and social cohesion were highlighted at the summit. For example, the International Labor Organization (ILO) says that the epidemic undermines both economic and social development by reducing productivity and competitiveness through increased absenteeism, organizational disruption, and loss of skills, resulting in added costs for training new staff as productive workers die. Productivity and development have also suffered as the disease has affected education, with children removed from school, to nurse family members, work the land or because schools have closed as teachers have died. These problems are particularly acute in Africa, where 28,500,000 people are living with HIV/AIDS, prompting warnings from the UN Envoy on HIV/AIDS in Africa that the effects of the epidemic "stand to undermine all efforts to promote development" and have created a skills shortage that years of aid and billions of dollars of development work had attempted to overcome.

The disease also disrupts society because of the widespread death it brings. The United Nations Children's Fund (UNICEF), for example, estimates more than 20 million children have been orphaned by the AIDS epidemic, with this figure expected to rise to 25 million by 2010, with many facing poverty and starvation as a result. Furthermore, an increasing number of children are born HIV-positive as more women are infected and drugs available to reduce transmission to the children are prohibitively expensive.

Similarly, the United Nations Security Council has highlighted the epidemic's potential threat to both national and international security, especially in conflict and peacekeeping situations, where the disease can lead to the complete breakdown of society and its regulatory systems. In response, the UN has adopted the UN Initiative on HIV/AIDS and Security, and implemented a two-year plan aimed at protecting vulnerable communities and supporting

(continued)

World AIDS Summit Warns of Challenges Ahead (continued)

their regulatory systems, such as the army and police force, to tackle the disease and maintain social stability.

Furthermore, HIV/AIDS not only kills millions of people itself, it also increases the prevalence of other communicable and potentially fatal diseases such as tuberculosis (TB) and malaria. All these diseases are straining healthcare systems in developing countries, leaving impoverished patients to try to pay for their own treatment and stretching the system so far that there is little funding to treat other healthcare problems, resulting in a drop in healthcare standards and a rise in fatalities. This appears to have affected migration as well, with developed countries noting more people seeking to move abroad to gain medical care and some developed nations tightening their immigration rules in response.

The HIV/AIDS epidemic thus has profound implications for globalization, threatening global health, retarding development, damaging productivity, creating new threats to global security, and raising questions over how best to help developing nations deal with the challenge of disease epidemics. The success or failure of multi-agency strategies proposed to deal with the threat of HIV/AIDS will profoundly affect the future for all nations and the global scope of the threat may affect the way health and development issues are viewed in the future.

Diseases Go Global

According to one estimate, by the time of the European colonization of the Americas, plagues such as smallpox and measles could travel around the world within the span of a year. Today, of course, with international air travel, an infected person can carry a disease from almost any point of the globe to any other point in less than 36 hours.

One of the particularly threatening aspects of this compression of time is that people can now cross continents in periods of time shorter than the incubation periods of most diseases. This means that, in some cases, travelers can depart from their point of origin, arrive at their destination and begin infecting people without even knowing that they are sick.

The new ease with which infectious diseases can be transmitted globally is having a direct and dramatic effect on morbidity and mortality around the world. In the United States, for example, the incidence of infectious disease-related deaths has been increasing by roughly 4.8 percent per year since 1980, bringing the number of deaths up to 59 per 100,000 by 1996. This translates into 170,000 U.S. deaths annually. This increase follows nearly a century of long-term, steady decline in the number of deaths from infectious diseases in the United States.

Similarly, in the United Kingdom, which had almost completely eradicated tuberculosis from the British Isles by 1953, 7000 new cases of the disease occurred in 1990.

The dangers posed by these diseases go beyond simply medical concerns. In January of 2000, the U.S. Intelligence Community issued a declassified report concerning the spread of global infectious diseases. This National Intelligence Estimate found that:

"New and re-emerging infectious diseases will pose a rising global health threat and will complicate U.S. and global security over the next twenty years. These diseases will endanger U.S. citizens at home and abroad, threaten U.S. armed forces deployed overseas, and exacerbate social and political instability in key countries and regions in which the United States has significant interests."



The threat of political instability—which can be defined as wars, ethnic conflict, and violent regime transitions—is most likely to endanger developing countries. In these nations the burden of disease can strain already meager national budgets, set off competition for resources, and result in the death or disability of important government officials.

In many African countries in particular, the most skilled and wealthiest segments of the population are often the most severely affected by the HIV virus. This tends to be the case because the wealthier segments of the population tend to be more mobile and have more opportunities for sexual partners.

"...The concept of domestic as distinct from 'international health' is outdated. Such a dichotomous concept is no longer germane to infectious diseases in an era in which commerce, travel, ecologic change, and population shifts are intertwined on a truly global scale." (U.S. CDC, Addressing Emerging Infectious Disease Threats: A Prevention Strategy for the United States).

Similarly, the armed forces of some African countries are estimated to harbor infection rates of between 10 and 60 percent. Losses of key military leaders and senior officers can lead to breakdowns in the chain of command, and make it more tempting for younger officers to launch coup attempts.

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<www.globalization101.org/news.asp?NEWS_ID=35>.

Diseases Go Global (continued)

Of course, the problems of health and instability are not limited to Africa or to the HIV virus alone. Political instability is most likely to arise in the presence of broad social upheaval. A recent major study by political scientists looked into the causes of 127 cases of state instability around the world over a forty-year period, evaluating each of these cases according to the presence of certain variables or indicators of social and political turmoil. Out of 75 factors they analyzed, 3 emerged which proved to correlate the most strongly as predictors of political instability. These three most powerful determinants were:

- incomplete democratization,
- low openness to international trade, and
- infant mortality.

In particular, they found that high infant mortality within a state that is only partially democratic is most likely to produce instability.

Questions for Discussion:

The study on political instability found that incomplete democratization, low openness to international trade, and infant mortality are the three strongest predictors of political instability. Do you think these three predictors are related to each other? How?

Why does the spread of infectious disease lead to political instability?

If the spread of infectious diseases have been around for centuries, why does it seem like this is a relatively new phenomenon? What do you think has drawn increased attention to global diseases?

Do you think there is a connection between infectious diseases and economic development?





Topic 4 Culture Shock

(1–2 lessons)

This topic is important for students who plan to travel or study abroad. Students will examine the concept that culture has both a surface level and deeper, invisible dimensions. They will use graphic organizers to organize thinking, discuss abstract ideas, discern between

observation and interpretation (and denotative and connotative language), report on an interview, listen to extract information, consciously select reading comprehension strategies, and identify differences and similarities in cultures.

Outcomes

SLO 4.1 Use language to encourage...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.7 Evaluate a given text...

SLO 2.2 Use several visual techniques...

SLO 4.1 Use language to encourage...

SLO 4.2 Communicate effectively to work with others...

SLO 6.2.7 Use elaboration...

SLO 6.3.1 Use questioning for clarification...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Sequence 1

Activation

Begin with a discussion of what happened to the *Titanic*. Why are icebergs dangerous for ships?

Have students hold that concept until the next concept is introduced.

Language Features

Vocabulary

Titanic, iceberg

Brainstorm meanings for the term "culture." The word is frequently used, but with different meanings and significance. You may want to begin with groups of students listing or webbing on a large sheet of newsprint things that they think are part of culture (e.g., food, music, language). Share and discuss. Then attempt to construct a definition with the students. Compare this definition with one by Craig Storti in *Figuring Foreigners Out*: "Culture is the shared assumptions, values, and beliefs of a group of people which result in characteristic behaviours." (p. 5)

If the class is monolingual, discuss what a foreigner would notice about their culture or what they have noticed about Canadian/North American culture; if multilingual, discuss the differences between their cultures and Canadian culture.

Other questions for discussion: Does culture change? (Yes!) How do people "get" their culture? (Learned. How?)

Language Features

Vocabulary

culture, assumptions, values, characteristic

Expressions: traditional culture, high culture, popular culture

Discourse Features

definition format (review)

expressions for comparison

Academic Language Functions

describing

comparison

discussing

Student Learning Tasks

Discuss what happened to the *Titanic* and why icebergs are dangerous for ships. (C)

In groups, brainstorm meanings for the term "culture," listing or webbing on a large sheet of newsprint things that are part of culture (e.g., food, music, language). Share and discuss. (B) (C)

Discuss what a foreigner would notice about our culture or what they have noticed about Canadian/North American culture; if multilingual, discuss the differences between their cultures and Canadian culture. (C)

Teacher Notes and References



Visuals of the *Titanic* and an iceberg (teacher-provided)



Nine-tenths of the iceberg is hidden below the water. You can avoid the danger of what you can see, but you may not realize how much is below the surface.



Newsprint and markers



Many students have never examined the idea of culture, and if they have never had much exposure to other cultures, they may not even see themselves as cultural beings or may assume that their culture is superior. It is important for the teacher to think through this exercise.

The differences students identify between their cultures and Canadian culture are likely to be surface-level features. It can be interesting to also discuss the differences between "traditional culture," "high culture," and "popular culture."

Outcomes

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.2 Use several visual techniques...

SLO 4.1 Use language to encourage...

SLO 6.2.3 Use grouping of items to classify...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.2.10 Use translation...

SLO 6.2.12 Use inferencing to guess the meanings...

Instructional and Learning Sequence

Introduce the list of features of culture and the picture of an iceberg. Ask the students to write above the waterline the numbers of the features that are observable (seen), and write below the waterline the features that are not as easily seen.

Check answers, noting that the invisible features often cause or influence the visible ones.

Discuss why the unseen features may cause more difficulty between people of different cultures than the visible differences.

Language Features**Vocabulary**

names of features of culture

expressions for stating opinions, for clarifying, for disagreeing

Academic Language Functions

justifying

explaining

Student Learning Tasks

Write above the waterline on **Handout 5-17: "The Iceberg"** the numbers of the cultural features listed in **Handout 5-16: "Features of Culture"** that are observable (seen), and write below the waterline the features that are not as easily seen. (I)

Discuss why the unseen features may cause more difficulty between people of different cultures than the visible differences. (C)

Teacher Notes and References



Handout 5-16: "Features of Culture"

Handout 5-17: "The Iceberg"
(text and visual)



This exercise provides a valuable opportunity to develop understanding of both teacher and students as culture-bearers.

This concept is likely new to some.

Suggested Answers: In the visible portion of the iceberg: 1, 3, 5, 7, 10, 11, 15, 16, 21, 22

In the invisible portion: 2, 4, 6, 8, 9, 12, 13, 14, 17, 18, 19, 20, 23, 24, 25

Outcomes

SLO 4.2 Communicate effectively to work with others...

SLO 6.1.3 Use directed attention...

SLO 6.1.4 Use functional planning...

SLO 6.2.3 Use grouping of items to classify...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.13 Use recombination...

Instructional and Learning Sequence

- a) Have students make a list of observations about Canadian/North American culture. Use some of the features from the previous list to get them started. Each student writes several statements on a flip chart.
- b) Define "observation" and "interpretation." Use the concept attainment technique, if desired, to establish the distinction in meaning (e.g., "Canadian food is unhealthy" [interpretation]; "Canadians eat a lot of fast food" [observation]).
- c) Ask students to identify which of their statements about Canada are observations and which are interpretations. Ask a student who thinks a statement is an interpretation to rephrase it as an observation.
Why is it important to know and practise the difference between observation and interpretation?

Language Features

Vocabulary

observation, interpretation

Structures

present tense for general truths

limiters (e.g., some, most)

Discourse Features

connotative vs. denotative language. This is very challenging and students will need examples.

Academic Language Functions

predicting

justifying

inferring

Student Learning Tasks

Make a list of observations about Canadian/North American culture. (I) (C)

Identify which of your statements about Canada are observations and which are interpretations.

Teacher Notes and References

Flip chart or large sheet of newsprint



Some students will have had limited contact with Canadians, and may base their statements on media depictions or hearsay.

Do not correct statements at this point.

As a teacher, share a misunderstanding that you may have experienced with another culture by interpreting behaviour instead of observing it.

It may be difficult to decide between observation and interpretation with some of the statements, but this can lead to a productive discussion.

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 1.6 Interpret a range of texts...

SLO 1.7 Evaluate a given text...

SLO 5.1 Identify common themes and symbols...

SLO 5.2 Analyze and use the appropriate level of formality...

SLO 6.1.1 Use advanced organization...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.9 Use summarization...

SLO 6.3.1 Use questioning for clarification...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Preview

- a) Introduce **Handout 5-18: "Culture Shock: A Fish Out of Water"** by talking about experiences travelling to a new country (Canada or elsewhere). How did people feel at first? How did they feel later on? If they felt unhappy or angry later on, they may have been going through "culture shock."
- b) Refer to **Handout 5-19: "Comprehension Strategies."** Ask students to check off the ones they have already used (likely, build background information). Are there other strategies they would like to add? Remind them to use most of the effective strategies as they approach the text.
- c) Read silently, paragraph by paragraph, using the Read-Pair-Share strategy. Students take turns summarizing the main points of the paragraph they have just read, while the partner listens to confirm or clarify.
- d) Post-reading questions:
 1. Have you or anyone you know experienced culture shock?
 2. Describe the five steps in adjusting to a new culture.
 3. Is it possible to avoid culture shock?

Note the likely audience and purpose for this reading. Discuss which of the comprehension strategies students used, and which were most useful.

Language Features

Vocabulary

distinct, interpersonal, cues

Idioms: fish out of water, red carpet, show off

Academic Language Functions

discussing

summarizing

describing a process

Student Learning Tasks

- a) Discuss the experiences of travelling to a new country (Canada or elsewhere). (C)
- b) Refer to **Handout 5-19: "Comprehension Strategies"** and check off the comprehension strategies you have already used. (I)
- c) Read **Handout 5-18: "Culture Shock: A Fish Out of Water,"** using the Read-Pair-Share strategy. Take turns summarizing the main points of the paragraph you have just read, while your partner listens to confirm or clarify. (P)
- d) Discuss the post-reading questions. (C)
Discuss which comprehension strategies were effective.

Teacher Notes and References

Handout 5-18: "Culture Shock: A Fish Out of Water"

Handout 5-19:
"Comprehension Strategies" (Before, During and After Reading—3 pages)



Students should work through the reading (Handout 3) with minimal guidance. This reading is intended for international students preparing to study in North America or already there.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 6.1.3 Use directed attention...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 1.2 Respond to texts with increasing independence...

SLO 6.2.7 Use elaboration...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 3.1 Seek, organize, and synthesize information...

SLO 3.3 Quote from or refer to sources...

SLO 4.2 Communicate effectively to work with others...

SLO 6.1.2 Use organizational planning...

SLO 6.1.4 Use functional planning...

SLO 6.1.8 Use self-evaluation to check...

Instructional and Learning Sequence

Preview several focus questions for the listening selection.

Adapt the script for a cloze exercise by deleting every seventh word. Students listen to the script two or three times, then compare their answers with the original script.

Language Features

Vocabulary

generally speaking, quaint, novel, honeymoon, euphoria, in a different light, wears off, stage (of a process)

Pronunciation

stress on content words and discourse markers

Have students read **Handout 5-20: "Culture Quotes"** independently in preparation for later discussion.

Language Features

Discourse Features

poetic language

Sequence 2

Speaking/Writing

Have students interview someone who has either moved to the students' country of origin or to Canada, and ask about their experiences with culture shock. How did they try to cope with it? How successfully adapted do they feel now? Students describe what they learned in a short article for a magazine for students who are planning to go abroad. They should use indirect speech and reporting verbs.

OR

Students write about steps they plan to take when in another culture, to try to help their experience with culture shock.

Language Features

Structures

question forms, present and past perfect tenses, reporting verbs, indirect speech (review)
article form (review)

Discourse Features

reporting speech

Academic Language Functions

describing
process

Student Learning Tasks

Listen to the script two or three times, then compare your answers with the original script. (I) or (C)

Read **Handout 5-20: "Culture Quotes"** as preparation for later discussion. (I)

Interview someone who has either moved to your country of origin or to Canada, and ask about their experiences with culture shock. (I)

Describe what you learned in a short magazine article directed at students who are planning to go abroad. (I)

OR

Write about steps you plan to take when among another culture to try to improve your experience with culture shock. (I)

Teacher Notes and References**Internet Resource:**

Mini-lecture on culture shock at: <www.esl-lab.com/shock1/shock1.htm> (video or audio, medium difficulty, 0:53 sec.); script available



This can be done as a class with a projector, or independently.



Handout 5-20: "Culture Quotes"

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 5.1 Identify common themes and symbols...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.7 Use elaboration...

Instructional and Learning Sequence**Journal**

Have students comment on one or more of the "Culture Quotes" from Handout 5-20.

Learning Log

What new ideas have you learned about culture in this lesson? Were there any ideas that were difficult to understand; if so, what strategies helped you?

Follow-up Suggestions

1. Using the list of features of culture, examine both visible and invisible features of students' culture that have changed in the last few years (e.g., spread of North American fast food) and those that have not.
2. Read the article and/or view the short video on the question "Do Whales Have Culture?" Based on Canadian research into whale language, this thought-provoking piece connects with topics of endangered species, language change, and culture.

Student Learning Tasks

Comment on one or more of the "Culture Quotes" from Handout 5-20 in your journal. (I)

In your Learning Log, write about new ideas have you learned about culture in this lesson. (I)

Teacher Notes and References**Internet Resources:**

Culture Matters Workbook at:
<[www.peacecorps.gov/](http://www.peacecorps.gov/wws/culturematters)

[wws/culturematters](http://www.peacecorps.gov/wws/culturematters)>

Pre-departure orientation for Chinese students to the U.S. (most of the material applies equally to Canada) at:

<www.china.nafsa.org>

"Do Whales Have Culture?" article and short video at: <www.sciencecentral.com/articles/view.php3?article_id=218392150>.



Features of Culture

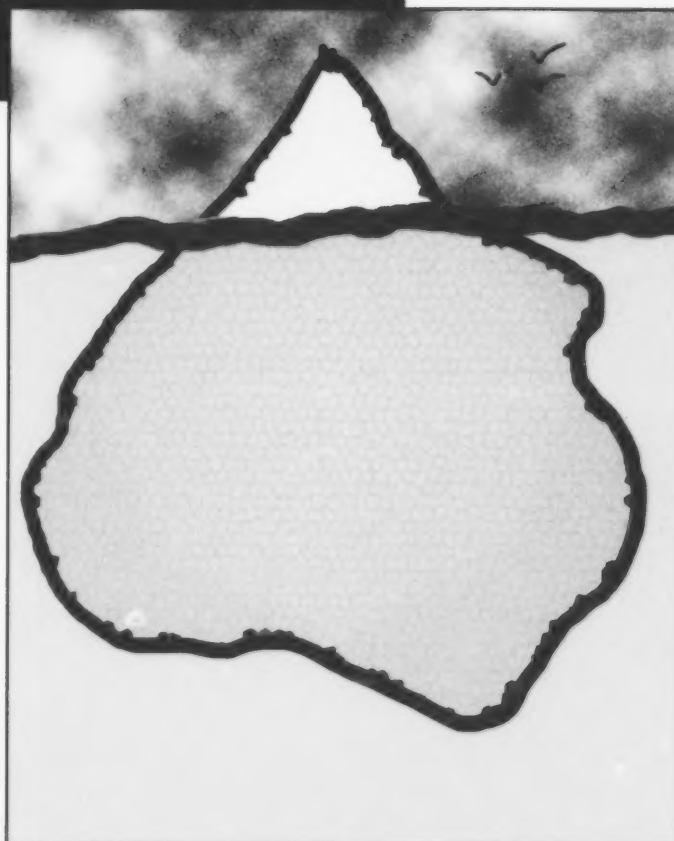
1. Facial expressions
2. Religious beliefs
3. Religious rituals
4. Importance of time
5. Paintings
6. Values
7. Literature
8. Child raising beliefs
9. Concept of leadership
10. Gestures
11. Holiday customs
12. Concept of fairness
13. Nature of friendship
14. Notions of modesty
15. Foods
16. Eating habits
17. Understanding of the natural world
18. Concept of self
19. Work ethic
20. Concept of beauty
21. Music
22. Styles of dress
23. General world view
24. Concept of personal space
25. Rules of social etiquette





The Iceberg

Culture has been aptly compared to an iceberg. Just as an iceberg has a visible section above the waterline, and a larger, invisible section below the water line, so culture has some aspects that are observable and others that can only be suspected, imagined, or intuited. Also like an iceberg, that part of culture that is visible (observable behaviour) is only a small part of a much bigger whole.





Culture Shock: A Fish Out of Water

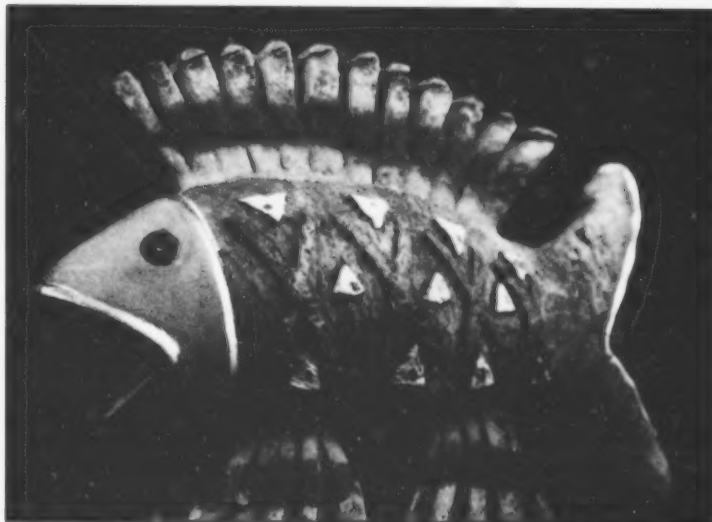
by *Duncan Mason*

Introduction:

1. Kalvero Oberg was one of the first writers to identify five distinct stages of culture shock. He found that all human beings experience the same feelings when they travel to or live in a different country or culture. He found that culture shock is almost like a disease: it has a cause, symptoms, and a cure.

Body:

2. Whenever someone travels overseas they are like "a fish out of water." Like the fish, they have been swimming in their own culture all their lives. A fish doesn't know what water is. Likewise, we often do not think too much about the culture we are raised in. Our culture helps to shape our identity. Many of the cues of interpersonal communication (body language, words, facial expressions, tone of voice, idioms, slang) are different in different cultures. One of the reasons that we feel like a fish out of water when we enter a new culture is that we do not know all of the cues that are used in the new culture.
3. Psychologists tell us that there are five distinct phases (or stages) of culture shock. It is important to understand that culture shock happens to all people who travel abroad, but some people have much stronger reactions than others.
4. During the first few days of your stay in a new country, everything usually goes fairly smoothly. You are excited about being in a new place where there are new sights and sounds, new smells and tastes. You may have some problems, but accept them as just part of the newness. You may find yourself staying in hotels or with a homestay family that is excited to meet you. You may find that "the red carpet" has been rolled out and you may be taken to restaurants, movies, and tours of the sights. Your new acquaintances may want to take you out to many places and "show them off." This first stage of culture shock is called the "honeymoon phase."
5. Unfortunately, this honeymoon phase often comes to an end fairly soon. You have to deal with transportation problems (buses that don't come on time), shopping problems (can't buy favourite foods), or communication problems (just what does "Chill out, dude" mean?). It may start to seem like people no longer care about your problems. They may help, but they don't seem to understand your concern over what they see as small problems. You might even start to think that the people in the host country don't like foreigners.
6. This may lead to the second stage of culture shock, known as the "rejection phase." You may begin to feel aggressive and start to complain about the host culture/country. However, it is important to recognize that these feelings are real and can become serious. This phase is a kind of crisis in the "disease" of culture shock. It is called the "rejection" phase because it is at this point that you start to reject the host country, complaining about and noticing only the bad things that bother you. At this stage you either get stronger and stay, or weaker and go home (physically or only mentally).



(continued)

Source: <<http://international.ouc.bc.ca/cultureshock/printtext.htm>>.

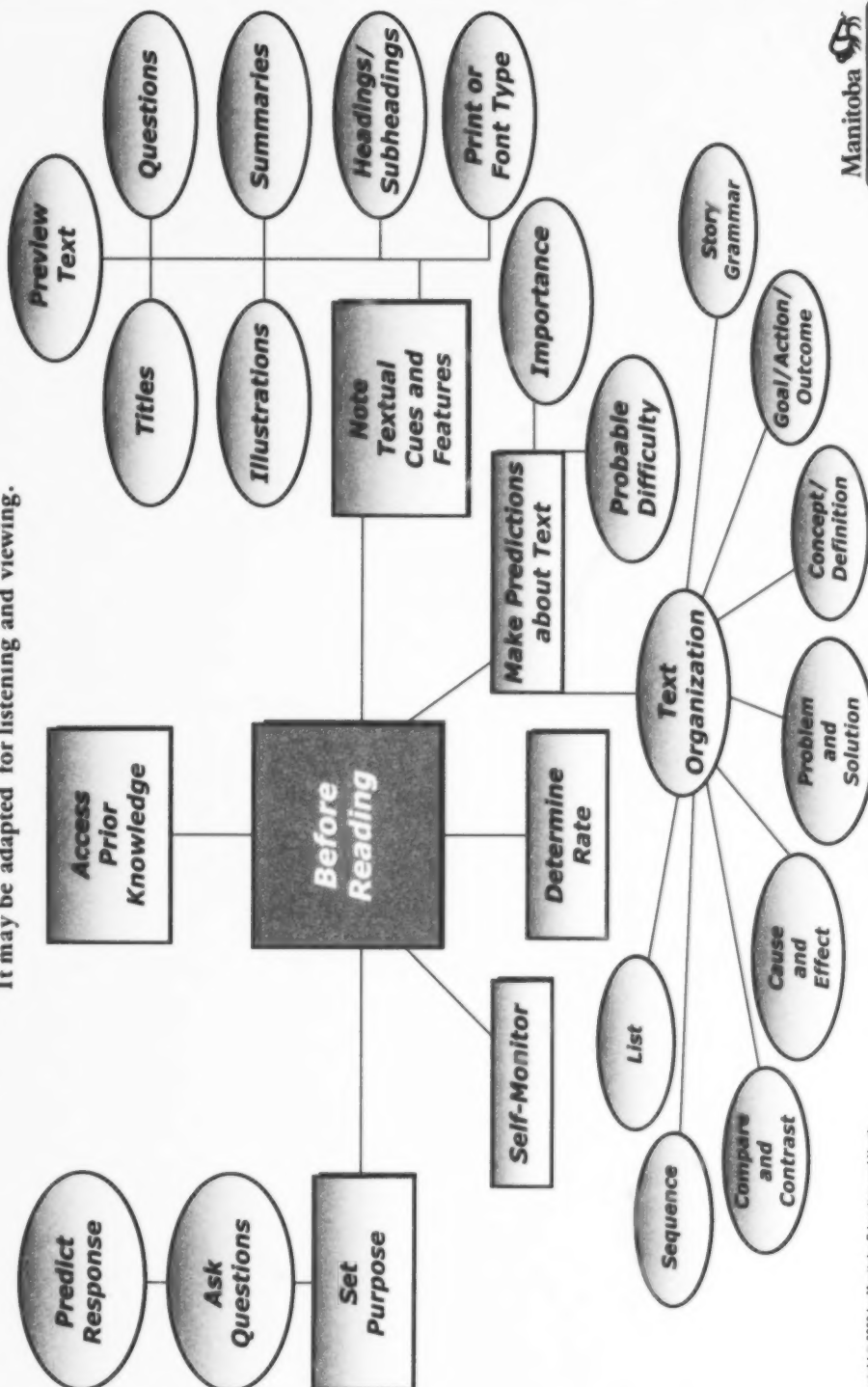
Culture Shock : A Fish Out of Water (continued)

7. If you don't survive stage two successfully, you may find yourself moving into stage three: the "regression phase." The word "regression" means moving backward, and in this phase of culture shock, you spend much of your time speaking your own language, watching videos from your home country, eating food from home. You may also notice that you are moving around campus or around town with a group of students who speak your own language. You may spend most of this time complaining about the host country/culture.
 8. Also in the regression phase, you may only remember the good things about your home country. Your homeland may suddenly seem marvellously wonderful; all the difficulties that you had there are forgotten and you may find yourself wondering why you ever left (hint: you left to learn English!). You may now only remember your home country as a wonderful place in which nothing ever went wrong for you. Of course, this is not true, but an illusion created by your culture shock "disease."
 9. If you survive the third stage successfully (or miss it completely) you will move into the fourth stage of culture shock called the "recovery phase" or the "at-ease-at-last phase." In this stage you become more comfortable with the language and you also feel more comfortable with the customs of the host country. You can now move around without a feeling of anxiety. You still have problems with some of the social cues and you may still not understand everything people say (especially idioms). However, you are now 90% adjusted to the new culture and you start to realize that no country is that much better than another—there are just different lifestyles and different ways to deal with the problems of life.
 10. With this complete adjustment, you accept the food, drinks, habits and customs of the host country, and you may even find yourself preferring some things in the host country to things at home. You have now understood that there are different ways to live your life and that no way is really better than another, just different. Finally you have become comfortable in the new place.
 11. It is important to remember that not everyone experiences all the phases of culture shock. It is also important to know that you can experience all of them at different times: you might experience the regression phase before the rejection phase, etc. You might even experience the regression phase on Monday, the at-ease phase on Tuesday, the honeymoon phase on Wednesday, and the rejection phase again on Thursday. "What will Friday be like?"
 12. Much later, you may find yourself returning to your homeland and—guess what?—you may find yourself entering the fifth phase of culture shock. This is called "reverse culture shock" or "return culture shock" and occurs when you return home. You have been away for a long time, becoming comfortable with the habits and customs of a new lifestyle and you may find that you are no longer completely comfortable in your home country. Many things may have changed while you were away and—surprise! surprise!—it may take a little while to become at ease with the cues and signs and symbols of your home culture.
- ### Conclusion
13. Reverse culture shock can be very difficult. There is a risk of sickness or emotional problems in many of the phases of culture shock. Remember to be kind to yourself all the time that you are overseas, and when you get home, give yourself time to adjust. Be your own best friend. If you do these things you will be a much stronger person. If you do these things, congratulations—you will be a citizen of the world!

Comprehension Strategies

Use Comprehension Strategies and Cues Before Reading

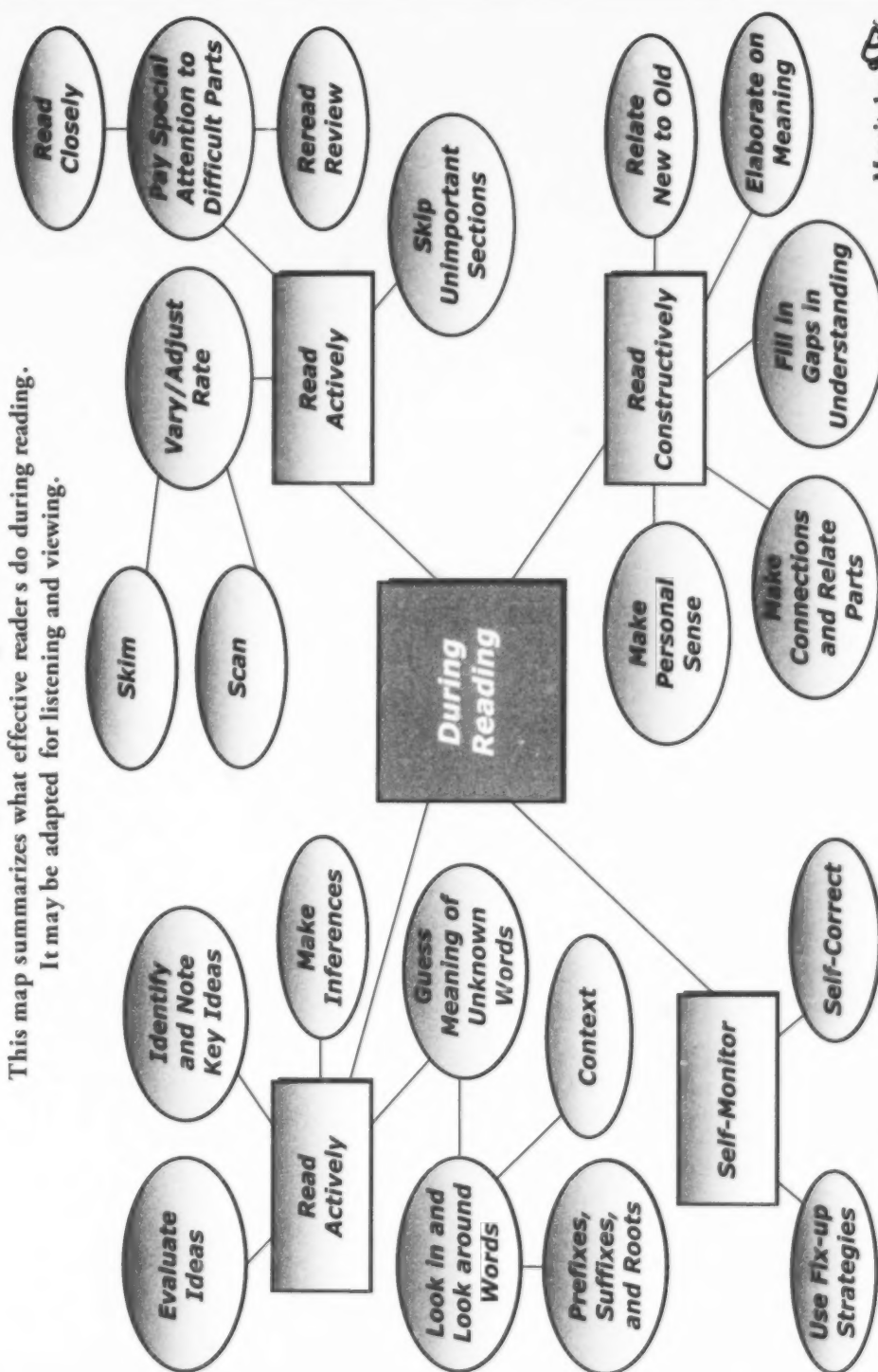
This map summarizes what effective readers do before reading. It may be adapted for listening and viewing.



Comprehension Strategies (continued)

Use Comprehension Strategies and Cues During Reading

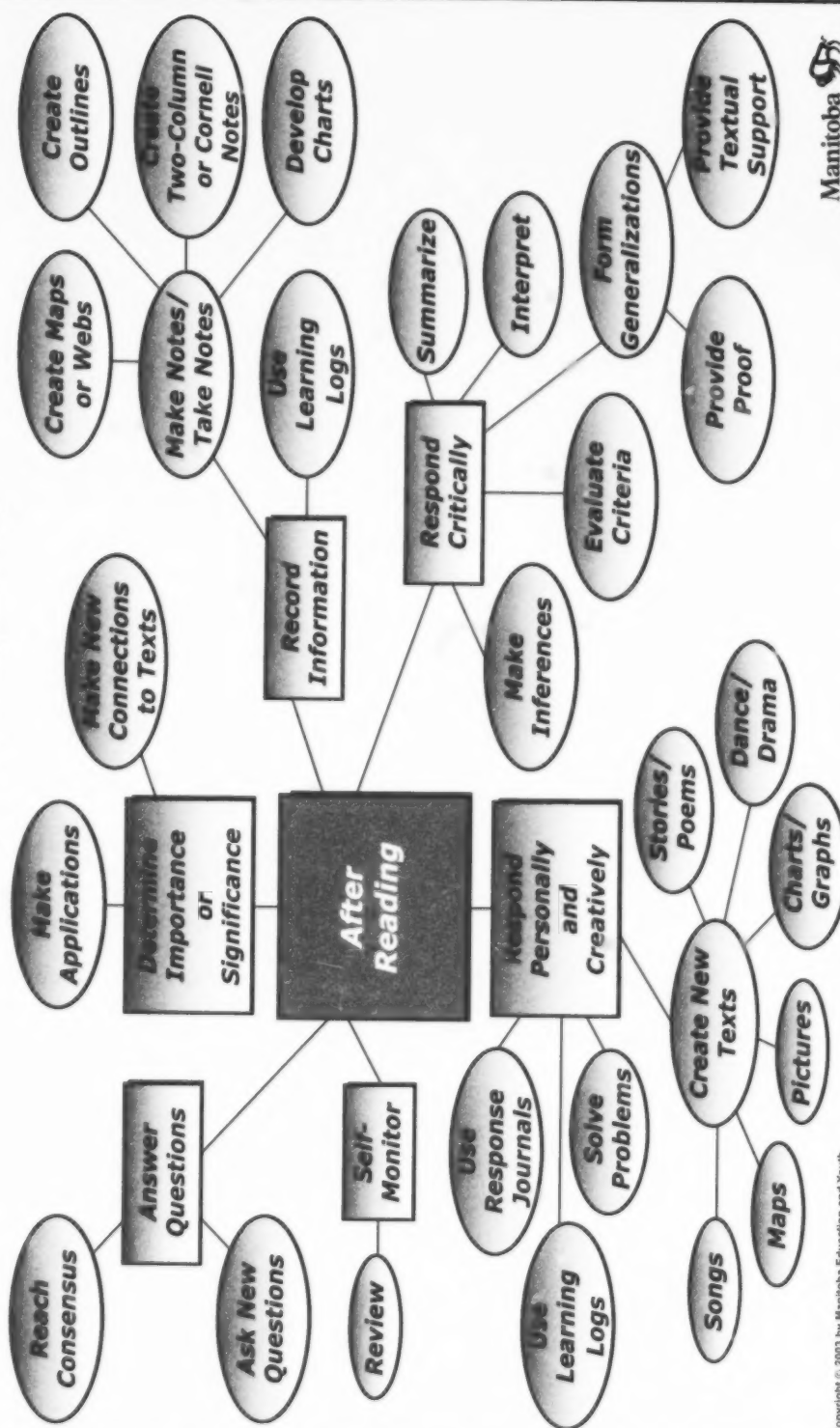
This map summarizes what effective readers do during reading.
It may be adapted for listening and viewing.



Comprehension Strategies (continued)

Use Comprehension Strategies and Cues After Reading

This map summarizes what effective readers do after reading.
It may be adapted for listening and viewing.





Culture Quotes

*All good people agree.
And all good people say,
All nice people, like us, are We
And everyone else is They.
But if you cross over the sea,
Instead of over the way,
You may end by (think of
it!) looking on We
As only a sort of They!
—Rudyard Kipling
"We and They"*

Understanding Other Cultures

Keep in mind the "seven lessons" writer Craig Storti derived from his book of cross-cultural dialogues:

1. Don't assume sameness.
2. What you think of as normal or human behaviour may only be cultural.
3. Familiar behaviours may have different meanings.
4. Don't assume that what you meant is what was understood.
5. Don't assume that what you understood is what was meant.
6. You don't have to like or accept "different" behaviour, but you should try to understand where it comes from.
7. Most people do behave rationally; you just have to discover the rationale.

"Despite popular beliefs to the contrary, the single greatest barrier to business success is the one erected by culture."

—Edward T. Hall and
Mildred Reed Hall
*Hidden Differences: Doing Business
with the Japanese*

Practical Steps to Relieve Culture Shock

In *The Whole World Guide to Culture Learning*, J. Daniel Hess explains that "one of the problems with culture shock is that frequently people don't realize (or deny) they are experiencing it. The feelings are ascribed to other causes. It is difficult to counteract something you don't believe is affecting you, but once you do recognize what is happening, there are a number of things to do."

Here are some suggestions for people who are experiencing the loneliness or other distress of culture shock.

1. People are important. Don't isolate yourself. Interact with everyone you can. You may need to take the first step because they may not realize that you are lonely. Give small gifts, help with something, smile, and ask questions.
2. Keep your environment comfortable. Decorate it with little reminders of home: a favourite cup or photo. Play your music or watch a video. But try the new ones too.
3. Slow down until your body and emotions have had time to catch up. You've gone through a major change in your life and you need time. Simplify and relax.
4. Do the same thing every day until you feel that it is part of your routine.
5. Express your feelings. This may be privately, through prayer, writing, journaling, art, etc., or publicly to a friend.
6. When you feel disappointed or frustrated in your slow progress, remember that this is just a detour—and detours often have beauties of their own.
7. Work on the language. Being able to use even small bits will increase your confidence and enjoyment. And it's a great way to make friends.
8. Keep moving—find ways and time to get exercise. What do the locals do for fun?
9. Friends and host families want you to succeed. Let them know when you are sad so that they can support you.
10. Make a few small plans and complete them. Every little achievement will help you gain the confidence to tackle the next one.

Remember that culture shock is a normal process of adjustment, and if you allow yourself time and kindness, it will pass. Some people fear that if they adjust too well to the new environment, they will forget their old one, but a better view is enrichment—you will now have two cultures to draw on.





Source: <<http://www.yaoming.net/home.aspx>>

Topic 5

He Shoots; He Scores; He Sells:

Yao Ming and His Appeal to the International Market

(1.5–2 lessons)

This lesson focuses on the Houston Rockets star, Chinese-born Yao Ming. Students will look at Yao Ming as a player and as a marketable product, listen to an audiotape about him, look at an Apple commercial in which he stars, and discuss his marketable qualities. They will then design a marketing plan for Yao Ming as a symbol/spokesperson for the Beijing Olympics, or for a celebrity from their own country who could be marketed to the international community. Some of the other academic tasks are:

note taking; using visual aids; describing, explaining, and illustrating a point; summarizing; recognizing the speaker's attitude; listening to obtain specific information; listening critically; understanding the relations between parts of a text through lexical and grammatical cohesive devices and through discourse indicators; extracting salient points to summarize; understanding media; and using appropriate writing techniques to plan, revise, edit, and complete a writing task.

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 2.1.3 Use developing control of grammatical features...

SLO 4.1 Use language to encourage...

SLO 6.2.7 Use elaboration...

SLO 6.2.8 Use imagery in the form of mental or actual pictures...

SLO 6.3.2 Use co-operation...

Instructional and Learning Sequence

Sequence 1

Activation

Have students examine the pictures of Yao Ming. Ask students what they know about Houston Rockets basketball star, Yao Ming, using questions like the following:

1. Who is Yao Ming?
2. Describe the qualities that made him attractive to basketball scouts. Focus on his background, how he was scouted, his adjustment to the U.S., and his contributions to his team.
3. Speculate on why Yao Ming is so popular. As a person? As a basketball player?
4. Reflect on how the international market is providing new sports icons that have global appeal.
5. Name other sports figures, movie stars, or singers from your country of origin with the global appeal of Yao Ming.

Record all answers.

Language Features

Structures

adjectives for description
 correct use of tense, especially correct use of third person present tense
 verbs followed by the preposition "on": reflect on, focus on
 verbs used in academic questions, such as describe, predict, name, reflect on

Discourse Features

review of discussion expressions

Academic Language Functions

describing, explaining

Student Learning Tasks

Examine the pictures of Yao Ming and discuss the five questions presented by the teacher. (C)

Teacher Notes and References

Visuals of Yao Ming (teacher-provided). Some are available at <www.allposters.com> (key in "Yao Ming" in the search box).

Sources of additional information are located on the Internet and in magazines such as *Time*, *People*, and *Sports Illustrated*, especially in the winter of 2003 editions. Examples:

- "Sky Rocket." *Sports Illustrated*. 10 Feb 2003: 34-39.
- "The New Mr. Big." *Sports Illustrated*. 28 Oct. 2002: 66-69.



Students may not know a lot about Yao Ming. Let them share what they do know and provide or have them research more information as needed.

In Chinese culture, a person's given name comes after their family name. Therefore, during class discussions about Yao Ming, be aware that his "first" name is Ming, not Yao.

This activity could be done with any person who could have or has appeal in the global market.

Outcomes

SLO 1.1 Engage with increasingly difficult oral and/or visual texts...

SLO 1.5 Examine and interpret various visual media...

SLO 4.1 Use language to encourage...

SLO 6.1.1 Use advanced organization...

SLO 6.1.3 Use directed attention...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.2.5 Use deduction and induction...

SLO 6.2.11 Use transfer...

SLO 6.2.12 Use inferencing to guess the meanings...

Instructional and Learning Sequence

Activity 1

Tell students they are going to watch a video about Yao Ming's first days as a Houston Rocket. Once they access the Internet site they will have to listen carefully to the tape to try to fill in the blanks in the exercise. Have students work together in small groups to preview the cloze exercise (**Handout 5-22: "Cloze Passage: 'Houston's Little Giant'"**) to see if they can predict what will go in the blanks. Make sure they know key vocabulary. Play the tape once as students fill in the cloze. Repeat the tape more than once if necessary. Correct the exercise as a class.

Review any new terms and expressions and do any necessary grammar mini-lessons. Students should also carefully reread the written information on each page of the clip transcript. There will be a number of unknown expressions to work on.

What is it that the clip seems to indicate about Yao Ming's marketability?

Extension: Students may enjoy listening to "All the Way to Reno (You're Gonna Be a Star)" by R.E.M., accompanied by slides of Yao Ming. The song lyrics can be accessed via the Internet.

Language Features

Vocabulary

From the audio: engaging, learning curve, leverage, fully extended, timid

Idioms: really lost, no matter how you stack it, tippytoes

From the written description accompanying each still:

North American references: "What's up?", Hummer, Michael Jordan, Tiger Woods

General vocabulary: anticipated, profanity, dwarfs, debut, segment, rebounded, adjustment

Basketball/sports terms: battles, guard, centre, number one draft pick, rookie, pre-season, drew fouls, scoring, blocking, superstar, number one icon

Structures

Phrasal verbs: getting used to, goes up against

Discourse Features

note use of hedging expressions in "Houston's Little Giant" clip

Pronunciation

note accent, reduction, linkage in audio

Student Learning Tasks

In small groups, listen to the tape and fill in the blanks in

Handout 5-22: "Cloze Passage: 'Houston's Little Giant'." (G)

Correct the exercise as a class. (C)

Reread the written information on each page of **Handout 5-21:** "Script for the slides of 'Houston's Little Giant'" and review new terms and expressions. (I)

Teacher Notes and References



Handout 5-21: "Script for the slides of 'Houston's Little Giant'"

Handout 5-22: "Cloze Passage: 'Houston's Little Giant'"

Handout 5-23: "Cloze Passage Transcript: 'Houston's Little Giant' (Teacher Version)"

Internet Resource: Clip of still pictures with audio: "USA Today: Houston's Little Giant." Go to

<www.usatoday.com/sports/basketball/nba/rockets/2002-10-28-yao-usat-cover_x.htm>: "Yao demonstrates NBA's reach" by Tom Weir. Go to sidebar "Beyond Words, audio photo gallery." Click on "USA Today's Tom Weir on Houston's Little Giant." (The clip discusses Yao Ming's early days in the U.S. with the Rockets.)



You can reformat the cloze in **Handout 5-22:** "Cloze Passage: 'Houston's Little Giant'" to leave out words that work best

for your students. This cloze is missing contractions, idioms, and colloquialisms, as well as more difficult words. The audio and the written captions on each page, provide a great opportunity to discuss North American culture and informal language as well as expressions students would need to know when playing basketball. It also exposes students to different accents. Have students note hedging expressions used by the speaker.

Play the tape one to three times, depending on the listening skills of your students.

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.5 Examine and interpret various visual media...

SLO 1.7 Evaluate a given text...

SLO 4.1 Use language to encourage...

SLO 4.2 Communicate effectively to work with others...

SLO 4.3 Use clear and respectful language...

SLO 5.3 Analyze ways in which language and text affect... contemporary culture

SLO 5.4 Show understanding of the effect of cultural background...

SLO 6.1.5 Use selective attention...

SLO 6.2.7 Use elaboration...

Instructional and Learning Sequence

Activity 2

Introduce the idea that famous people often endorse products. Introduce Yao Ming's commercial for Apple computers. Do students know of any other products he endorses?

After watching the commercial, students divide into quads to answer the following questions: Why would this company use Yao to promote their PowerBook? What is the appeal of the commercial?

Focus on Yao Ming's personal qualities and how they are used in the commercial. (Contrast between the two celebrities and their PCs; Ming's expressive face, et cetera) Why is there no speaking in the commercial? Does the lack of speaking detract from the power of the commercial? What market is Apple trying to reach?

Students jot down notes. Finally, they should meet as a class to discuss their responses.

Language Features

Vocabulary

body language, gestures, contrast, endorsements

Discourse Features

contrast markers

Academic Language Functions

comparing, contrasting, describing

Student Learning Tasks

Watch the commercial, then break into quad groups to answer the teacher's questions. (6)

Make notes. (6) As a class, discuss responses. (6)

Teacher Notes and References

Internet Resource: Apple commercial:

<www.esm.psu.edu/Faculty/Gray/movies.html> Scroll down to "The Mini-Me/Yao Ming 12"/17" PowerBook commercial. (6.8M)."



When you click on the address, you will immediately get a small version of the Apple commercial that will play automatically. To get a full screen version, click on "videos," and when that screen comes up, click on 'full screen.' You will need *QuickTime 5* to play the full screen video.

You will want to make sure that students know Mini Me from the Austin Powers movies.

Outcomes

SLO 1.4 Show an awareness of organizational patterns...

SLO 2.1.1 Analyze and edit texts...

SLO 2.1.3 Use developing control of grammatical features...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 2.2 Use several visual techniques...

SLO 2.3.1 Use the structures and language features...

SLO 2.3.3 Produce effective oral presentations.

SLO 3.2 Develop and implement a plan for researching...

SLO 3.3 Quote from or refer to sources...

SLO 4.2 Communicate effectively to work with others...

SLO 4.4 Manage group action...

SLO 5.3 Analyze ways in which languages and text affect...contemporary culture.

SLO 5.7 Select and present ideas...keeping in mind the intended audience.

SLO 6.1.2 Use organizational planning...

SLO 6.1.4 Use functional planning...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.7 Use problem identification...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.7 Use elaboration...

Instructional and Learning Sequence

Writing Activities

Given what students have learned from discussing Yao Ming's marketability, they work in groups of four to:

1. Design a business plan to market another well-known star from the student's country of origin to an international market. What company would want this star? What is his or her appeal? How would his or her qualities be useful in promoting the goods sold by the company? Can a slogan be created?

OR

2. Create a plan that focuses on Yao Ming and promotes the 2008 Olympics in Beijing. What would be the best promotional connection? Culture? Basketball? International stardom? Marketability of international players? Beijing as the home of exceptional athletes? Beijing as a spectator of international sport? Beijing as a promoter of dreams? Students can begin by brainstorming for possible connections that will help promote the Beijing Olympics, the city and culture, and positive attitude toward sport.

Plans must contain written and visual components. They can be handed in or presented to the class.

You will want to create a suggested format for students to follow, such as the one below:

1. Introduction of star with visual(s) and music
2. List of marketable qualities
3. Slogan
4. Personal/media endorsements and testimonies
5. Suggested endorsements sought/products the person could promote well
6. Target market

Language Features

Vocabulary

producer, consumer, consumer demand, capital, competition, strategy, choice, profit, entrepreneur, human capital resource, target market, opportunity cost, potential investors, advertising and promotional materials, sales approach, risk management

Academic Language Functions

explaining, describing, illustrating, analyzing, summarizing

Student Learning Tasks**Assignment**

In groups of four, design a business plan to market a well-known star from your country to an international market, following the suggested format. (6)

OR

In groups of four, follow the suggested format to create a plan that focuses on Yao Ming and promotes the 2008 Olympics in Beijing. (6).

Hand in your plan for marking or presenting to the class. (6)
(C)

Teacher Notes and References**Optional Internet Resources:**

Students may want to look at articles about Yao Ming to get ideas. Here are some sources:

“Yao Knows How to Strike a Pose with the Media” at: <http://espn.go.com/nba/columns/bucher_ric/1470637.html>

“Yao’s Appeal Transcends Basketball” at: <www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2002/11/28/SP102483.DTL>

“Asian Community Goes Wow for Yao” at: <www.chron.com/cs/CDA/printstory.HTS/sports/1460530>

“Yao Ming, China’s Incredible Hulk of the Hardcourt Becomes an NBA Sensation” at: <www.time.com/time/asia/2003/heroes/yao_ming.html>



You may want to assign this as a group project for written and oral presentation. Students will need to include visuals in this project.

Outcomes

SLO 1.2 Respond to texts with increasing independence...

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 2.3.1 Use the structures and language features...

SLO 2.4 Use the steps of the writing process...

SLO 6.1.5 Use selective attention...

SLO 6.1.6 Use self-monitoring to check...

SLO 6.1.8 Use self-evaluation to check...

SLO 6.2.1 Use resourcing to access...

SLO 6.2.7 Use elaboration...

SLO 6.2.9 Use summarization...

SLO 6.2.11 Use transfer...

Instructional and Learning Sequence

Sequence 2

Roundup

Have students go to the "Know Your Heroes" quiz and find out how well they know Asian icons. In their own words, students write a short piece about one of the stars they learned about. By clicking on the star's name, they will get some information.

Language Features

Structures

appropriate tense
sentence-combining structures

Discourse Features

paragraph structure

Academic Language Features

paraphrasing

Student Learning Tasks

Go to the "Know Your Heroes" quiz and find out how well you know Asian icons. Write a short piece about one of the stars you learned about. (I)

Teacher Notes and References

Internet Resource: "Know Your Heroes" quiz at:
<[www.time.com/time/asia/2003/heroes/ quiz.html](http://www.time.com/time/asia/2003/heroes/quiz.html)>

Script for the Slides of "Houston's Little Giant"

Slide 1: Nothing

Slide 2: Yao Ming, the NBA's most **anticipated** new player, **battles with guard** Steve Francis and **centre** Kelvin Cato during Yao's first practice with his Houston Rockets teammates last Tuesday. Yao surprised Rockets' head coach Rudy Tomjanovitch by practising the morning after arriving from China.

Slide 3: Yao Ming **goes up against** Kelvin Cato and Oscar Torres during practice. Yao, 22, **stands** 7', 5" and weighs 296 pounds. The practice was Houston's first look at their **number one draft pick**.

Slide 4: Teammate Steve Francis drives Yao Ming through rain during a charity golf luncheon. Yao, who studied English for five years, is slowly **getting used to** talking with his new teammates. The universal NBA greeting—"What's up?" has been difficult for Yao to get used to; it sounds like a common Mandarin **profanity**.

Slide 5: Yao Ming **dwarfs** Rockets cheerleader, Tina Hill, as they arrive at the charity golf luncheon. Steve Francis, walking behind Yao, says that "Even my **Hummer** is too small for him."

Slide 6: The media is following every move of the rookie Yao Ming. After his **debut** in a **pre-season** game where he **drew three fouls** in his first five minutes of action, ESPN strung together all of his worst moments for a Sportscenter segment. In his second preseason game, Yao **rebounded** by **scoring** 13 points and **blocking** 2 shots.

Slide 7: Yao Ming stands in line with translator Colin Pine during the charity luncheon. Although Yao speaks some English, Pine will be there to help Yao deal with the media and the **adjustment** to a new country.

Slide 8: Yao Ming won't get too homesick during his first full season in the NBA. Houston has a small downtown Chinatown and a daily newspaper that prints in Chinese. To help out with the adjustment to the new life, Yao's mother will stay with him at his Houston house during the whole season.

Slide 9: Yao Ming is photographed with admirers by translator Colin Pine. Rockets owner Les Alexander believes Yao will become a worldwide **superstar**: "In two years, he'll be bigger than Michael [Jordan] ever was, worldwide, and bigger than Tiger [Woods]. I think he's going to be the **number one icon** in the world."

Script is available online: <www.usatoday.com/sports/basketball/nba/rockets/2002-10-28-yao-usat-cover_x.htm>.



Cloze Passage: "Houston's Little Giant"

1. Audio:

There is something _____ engaging about the guy. You see _____ and you _____ him to do well. Uh, I think you _____ that from _____ fans.

There's just something very _____ likeable _____ him.

2. Audio:

He's looked _____ every day. I think the big thing he's _____ is that uh, _____ learning curve is going up. Um, his first day (in) _____ played a game, he was _____ lost quite _____. And then, the next night, 24 hours later, he comes back, and he was _____, much more um, in _____.

3. Audio:

He's 296 pounds. He's virtually 300, and _____ how you stack it, 300 pounds is _____ good. He has really strong, um, _____ body strength, so he's probably gonna be able to leverage _____ he gets, uh, a _____ more time in and learns the NBA game.

4. Audio:

All of them _____ been very surprised at, uh, the _____ he has with the English language. He did take five years in Middle School, and when he's having _____ conversations with them, he speaks _____ English, um, _____ they say quite _____. I talked to two guys _____ went _____ to him to the _____ Rock Café in San Antonio, and they said they _____ in English _____ the whole night.

5. Audio:

You never cease to be _____ by his height. That _____ he's going out to a tent at a "Meet _____" at a, uh, country club. And the cheerleaders _____ escorting us 'cause it was _____ very heavily. But even on tippytoes, fully extended, uh, they _____ get the umbrella over Yao Ming's head. Guys just look _____ every day and _____, "Man, that guy's just bigger _____ anything _____ we've ever seen!"

6. Audio:

He's a little _____, and I think it's mainly _____ a little concerned about _____ use _____ interpreter all the time. He _____ like to be doing it on his own. Doesn't always understand or _____ some of the... the more _____ questions. Like "_____ talk" was a new term _____.

7. Audio:

The big thing he's _____ for him when he's at home is that his _____ here and will be here for the whole _____. So she cooks for him, and he's real _____ that. He says he likes _____ a lot. Uh... he ate at the Hard Rock and the guys who ate with him said, you know, _____ no _____. I _____ him about that, and _____ pestering him and he wanted to give me an _____, and he finally said, "Well, you know, _____, I _____ like cold sandwiches that much," but it _____ a major complaint.

(continued)

Source: Audio from <www.usatoday.com/sports/gallery/2002-10-28-yaoming/flash.htm>.

"Houston's Little Giant" (continued)

8. Audio:

I think he _____ read a fair _____
of English and he is reading that
_____ paper...um... It's the
Southwest Asia News. Uh...so _____
_____ his news from there, and
they make _____ that he gets a paper every
day. He's getting _____ to
the Internet, too. He's got a laptop, and I think
they were _____ wire _____ all
_____ for him this week so that he can,
_____, have email _____
to friends and, and get on some of the Chinese
Internet _____.

9. Audio:

(Unintelligible) interesting _____
with the fans. Uh... he's been stopping and
_____ with people. In San
Antonio, he was walking down the streets and
the San Antonians were um...saying "Hey,
_____!" He got
a big _____ out of that. _____ he
_____ also that he, he's really felt that,
_____ getting to Houston, fans that
he's _____ haven't just
_____ him like a basketball player,
but he _____ they were treating him like a
Texan and, uh, he seemed genuinely
_____ by that.

**Cloze Passage Transcript:
"Houston's Little Giant" (Teacher Version)**

1. Audio:

There is something terribly engaging about the guy. You see him and you want him to do well. Uh, I think you sense that from the fans.

There's just something very immediately likeable about him.

2. Audio:

He's looked better every day. I think the big thing he's shown is that uh, his learning curve is going up. Um, his first day (in) that he played a game, he was really lost quite often. And then, the next night, 24 hours later, he comes back, and he was much, much more um, in control.

3. Audio:

He's 296 pounds. He's virtually 300, and no matter how you stack it, 300 pounds is pretty good. He has really strong, um, lower body strength, so he's probably gonna be able to leverage as he gets, uh, a gets more time in and learns the NBA game.

4. Audio:

All of them have been very surprised at, uh, the ability he has with the English language. He did take five years in Middle School, and when he's having casual conversations with them, he speaks in English, um, and they say quite well. That I talked to two guys that went out to him to the Hard Rock Café in San Antonio, and they said they spoke in English almost the whole night.

5. Audio:

You never cease to be surprised by his height. That picture is he's going out to a tent at a "Meet and Greet" at a, uh, country club. And the cheerleaders were all escorting us 'cause it was raining very heavily. But even on tippytoes, fully extended, uh, they couldn't get the umbrella over Yao Ming's head. Guys just look at him every day and you go, "Man, that guy's just bigger than anything else we've ever seen!"

6. Audio:

He's a little timid, and I think it's mainly he's a little concerned about having to use an interpreter all the time. He would like to be doing it on his own. Doesn't always understand or fully absorb some of the... the more cultural questions. Like "trash talk" was a new term to him.

7. Audio:

The big thing he's got going for him when he's at home is that his mother's here and will be here for the whole year. So she cooks for him, and he's real comfortable with that. He says he likes steak a lot. Uh... he ate at the Hard Rock and the guys who ate with him said, you know, he had no problem. I asked him about that, and I kept pestering him and he wanted to give me an answer, and he finally said, "Well, you know, okay, I don't like cold sandwiches that much," but it wasn't a major complaint.

8. Audio:

I think he can read a fair amount of English and he is reading that local paper...um... It's the *Southwest Asia News*. Uh...so he's getting his news from there, and they make sure that he gets a paper every day. He's getting hooked up to the Internet, too. He's got a laptop, and I think they were gonna wire it all up for him this week so that he can, you know, have email access to friends and, and get on some of the Chinese Internet availability.

(continued)

"Houston's Little Giant" (Teacher Version) (continued)

9. Audio:

(Unintelligible) interesting interaction with the fans. Uh... he's been stopping and posing with people. In San Antonio, he was walking down the streets and the San Antonians were um...saying "Hey, Mr. Houston!" He got a big kick out of that. And he said also that he, he's really felt that, since getting to Houston, fans that he's run into haven't just treated him like a basketball player, but he felt they were treating him like a Texan and, uh, he seemed genuinely touched by that.



Topic 6

Where Are We Going?

(2–3 lessons)

This culminating lesson offers students a chance to review previous themes and extend their thinking to a global basis. The options for research and presentation include the effects of globalization on a small country, a role-play based on one of the previous topics, and a forecast of the state of the world 50 years from now.

Students can choose a panel presentation, debate, or role-play, accompanied by a short report, poster, or computer presentation. Each project should review essential language features from the previous lessons. Students will peer-evaluate. The reasons and contexts for working in groups are discussed.

Outcomes

SLO 2.2 Use several visual techniques...

SLO 6.2.3 Use grouping of items to classify...

Instructional and Learning Sequence**Sequence 1****Activation**

Give students a list of 20 vocabulary items taken from all the previous modules. Make sure that four or five key words from each module are included. Using a graphic organizer, have students categorize the words into four groups. Students can name the categories, trying to make the fourth category unique. Share results and explain choices.

OR

Recall the modules covered in the course. Which topic was the most interesting to study? Which topic was the most important for the world? Why?

Discussion

Review some of the learning experiences from the course. Which ones were new to the students? Which did they prefer? Which were difficult or unpopular?

**Language
Features****Vocabulary**

items drawn from the five modules

Academic Language Functions

classifying

evaluating

Student Learning Tasks

Given 20 vocabulary items, use a graphic organizer to categorize the words into four groups. (I) Share results and explain choices. (C)

OR

Discuss: Which topic was the most interesting to study in the course? Which topic was the most important for the world? Why? (C)

Discuss the learning experiences from the course. (C)

Teacher Notes and References**Appendix 19: Sort and Predict Graphic Organizer**

Have the class volunteer words that they remember from previous lessons. Write these on the board until there are 20 significant words to use for the Word Sort activity. This activity should reawaken ideas and language needed for the main learning experience.

Outcomes

SLO 1.3 Develop and express a personal position in a variety of ways...

SLO 1.6 Interpret a range of texts...

SLO 4.1 Use language to encourage...

SLO 6.1.5 Use selective attention...

SLO 6.2.7 Use elaboration...

Instructional and Learning Sequence

Discussion and Reading

Invite feedback about the nature and amount of group or collaborative work required in the course.

If students are unconvinced about the importance of learning to work well in groups in an academic setting, refer them to **Handout 5-24: "Connecting the Dots"**

Begin with a discussion of how classes and assignments are usually conducted in their countries of origin. What do they think are the most important skills for success in the professional world? Identify some jobs in which people may be required to collaborate.

Read the text to find economic, career-related, and intellectual reasons for developing the ability to work in groups. After reading, identify the audience and purpose of this text. Predict what would likely follow. Discuss the ideas expressed. Have these ideas changed how the students perceive group work?

Introduce one or more of the final learning experiences described in Sequences 2 through 4.

Language Features

Vocabulary

vast majority, readily apparent, self-directed, important determinant, critical skill, procedurally convenient, regard, construct knowledge, back-and-forth, real-time version, embodied, discourse, multiple perspectives, phenomena, synthesize, purposeful, self-knowledge

Academic Language Functions

hypothesizing
cause and effect

Student Learning Tasks

Discuss the nature and amount of group or collaborative work required in the course. (C)

Discuss how classes and assignments are usually conducted in your country of origin. What do you think are the most important skills for success in the professional world? (C)

Read **Handout 5-24: "Connecting the Dots"** to find economic, career-related, and intellectual reasons for developing the ability to work in groups. (I)

Teacher Notes and References

Handout 5-24: "Connecting the Dots"



This discussion could also be held earlier in the course; however, the reading may be difficult in earlier stages.

Reflection on the reading could be done in the journal prior to discussion.

For the final learning experiences, allow students as much choice as possible.

Outcomes

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 3.1 Seek, organize, and synthesize information...

SLO 3.2 Develop and implement a plan for researching...

SLO 3.3 Quote from or refer to sources...

SLO 4.1 Use language to encourage...

SLO 4.2 Communicate effectively to work with others...

SLO 4.3 Use clear and respectful language...

SLO 4.4 Manage group action...

SLO 5.6 Evaluate texts...

SLO 5.7 Select and present ideas...keeping in mind the intended audience.

Instructional and Learning Sequence

Sequence 2

Research and Panel Discussion or Debate

Divide students into groups of three or four. Have them imagine that they are the leaders of a small nation that has been isolated from the rest of the world but is just now beginning to feel the influence of globalization. The nation is poor, but other nations seem to want the resources/cheap labour of the country. Additionally, the traditional way of life is being influenced by the outside world.

Students should research the pros and cons of globalization and present a debate or panel discussion on what course of action the nation should follow, giving reasons and possible consequences for their position.

Presentations can be peer- and teacher-evaluated, using a rubric.

The findings should also be written as a short position paper.

Language Features	Structures
	structures for prediction, possibility, and hedging (review) • expressing opinion; disagreeing
	Academic Language Functions
	comparing analyzing and interpreting justifying proposing solutions

OR

Sequence 3: Review and Role-Play

OR

Sequence 4: Research, Forecast, and Presentation

Student Learning Tasks

In groups of three or four, research the pros and cons of globalization on a small poor nation and present a debate or panel discussion on what course of action the nation should follow. (6)

Write up your findings in a short position paper. (1)

Teacher Notes and References

Create a videotape or audiotape of this presentation for the students' self-evaluation and for ease in teacher marking.

Outcomes

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 3.1 Seek, organize, and synthesize information...

SLO 3.2 Develop and implement a plan for researching...

SLO 3.3 Quote from or refer to sources...

SLO 4.1 Use language to encourage...

SLO 4.2 Communicate effectively to work with others...

SLO 4.3 Use clear and respectful language...

SLO 4.4 Manage group action...

SLO 5.6 Evaluate texts...

SLO 5.7 Select and present ideas...keeping in mind the intended audience.

Instructional and Learning Sequence

Sequence 3

Review and Role-Play

Divide students into groups of two or three. Each group will choose a theme covered in the course, or another issue of world concern, and develop a conversation about it. The conversation could be between two scientists, a journalist and a researcher, a talk-show host and an author, a doctor and patient, or other informed persons. They can look at the current situation or the possible future.

The conversation should be from five to seven minutes in length, and should contain examples of structures and vocabulary that were emphasized in class.

Students should write out a script of the conversation, but should be well-rehearsed. Students will perform the conversation before the class.

Presentations can be peer- and teacher-evaluated, using a rubric.

Language Features

Structures

structures for prediction, possibility, and hedging (review)
expressing opinion; disagreeing

Student Learning Tasks

In groups of two or three, choose a theme covered in the course, or another issue of world concern, and develop a conversation about it. (B)

Write out a script of the conversation and perform the conversation before class. (B) (C)

Teacher Notes and References

Videotaping or audiotaping the conversations allows the students to hear themselves and the teacher to evaluate carefully.

Outcomes

SLO 2.1 Show sufficient control over linguistic structures...

SLO 2.1.4 Refine pronunciation to increase intelligibility...

SLO 2.3 Produce a variety of short and extended text forms...

SLO 3.1 Seek, organize, and synthesize information...

SLO 3.2 Develop and implement a plan for researching...

SLO 3.3 Quote from or refer to sources...

SLO 4.1 Use language to encourage...

SLO 4.2 Communicate effectively to work with others...

SLO 4.3 Use clear and respectful language...

SLO 4.4 Manage group action...

SLO 5.6 Evaluate texts...

SLO 5.7 Select and present ideas ...keeping in mind the intended audience.

Instructional and Learning Sequence

Sequence 4

Research, Forecast, and Presentation

Students divide into groups of two or three and choose one of the topics (e.g., air pollution) covered previously. Students write a short joint report about the world or their country of origin in regard to that topic in the next 50 years. The report should refer to conditions, trends, possible changes, and consequences.

Students present their predictions to the class, accompanied by a short computer or poster presentation.

Presentations can be peer- and teacher-evaluated, using a rubric with criteria for both content and presentation.

Language Features

Structures

structures for prediction, possibility, and hedging (review)
expressing opinion; disagreeing

Academic Language Functions

predicting
expressing possibility
inferring

Student Learning Tasks**Teacher Notes and References**

In groups of two or three, choose one of the topics (e.g., air pollution) covered previously and write a short joint report about the world or your country of origin in regard to that topic in the next 50 years. Refer to conditions, trends, possible changes, and consequences. (6)

Present your predictions to the class, accompanied by a short computer or poster presentation. (6) (C)



Connecting the Dots

Often during this course you have been asked to work in groups. What is the role of social interaction in developing stronger writing? A common image of the writer is a solitary soul holed up in a room, feverishly pounding away at a computer, forgetting to eat or drink until the perfect line flows out onto the screen. Another misconception is of an extraordinarily gifted individual who can perfectly capture an idea in words at the first try.

However, professionals who write as part of their academic, scientific, or business careers increasingly depend on a writing community of colleagues for the majority of their work. They generate and test ideas as they sit around a table or share an email discussion; they may focus and organize these ideas using wall charts or whiteboards; they may split the writing and editing in different ways; circulate and critique their shared work electronically or in print; and finally come to a consensus on the final document. Much of the writing in the professional world today, including technical articles, proposals, advertising, reports, and web pages, is ultimately produced by a team.

The team approach to writing has been driven by several recent developments. First, the complexity of contemporary research, technology, and business demands more breadth or depth of expertise than one person likely has. Second, organizational patterns in the working world have been evolving from hierarchical systems to more self-directed teams who must produce their own documents. Finally, and perhaps most significantly, is the development of networked computers, so that team members can conveniently circulate and revise work within the

same office or from thousands of kilometres apart. As a result of this shift in working style, group interaction skills and the ability to team-write have become critical determinants of career success.

Beyond the efficiency of group writing, a writing community allows individuals the social interaction that helps construct knowledge. We see a topic through the perspective of our own experience, but as we are presented with multiple angles of vision, we are able to examine, focus, and expand our own knowledge. This process promotes the creation of new understandings. Oral discussion does this and so can team writing.

However, as in team sports, team writing is a learned skill. Most students are familiar with the dilemma presented by some group efforts, when one person completed the majority of the work, with others more than ready to accept equal credit for less than equal effort. Others recall wasted hours as the team members tried to organize themselves and focus on the task.



**Senior 4 ELA:
EAL for Academic Success**



Appendices

1. Strategies for Second Language Acquisition
2. How to Create a Summary
3. Skimming and Scanning for Academic Purposes
4. Note-Taking Symbols
5. T-List Procedures
6. How to Debate in Groups
7. How to Detect Bias
8. How to Evaluate a Website
9. Verbs Used in Academic Tasks across the Curriculum
10. Response Prompts
11. How to Analyze Editorial Cartoons
12. Presentation Evaluation Rubric
13. Preparing Interview Questions: A Student's Guide
14. Tips for Wording and Ordering Survey Questions
15. Tone Vocabulary
16. How to Write a TQT (Text Questioning Technique) Lesson
17. Evaluating Ads
18. Creating a Photo (Visual) Paragraph, Essay, or Report
19. Sort and Predict Graphic Organizer
20. How to Write and Use a DIT Lesson
21. How to Express Numbers in Written Work
22. Solving Math Word Problems
23. Mathematics Questions
24. Teaching and Learning EAL in the Senior Years
25. Resources for Building Content-Based Language Lessons



Strategies for Second Language Acquisition

The following list of strategies is suggested as a bank from which teachers may draw for explicit instruction and modelling. Not every strategy is useful for every context or learner, but individual students need to be aware of and able to use the most effective tools.

A. Language Learning Strategies

Cognitive

- listen for specific information
- learn routine patterns in content subjects, like science and mathematics
- imitate sounds and intonation patterns
- memorize new words by repeating them silently or aloud
- seek the precise subject-specific terminology to express meaning
- make personal dictionaries of everyday words and phrases as well as of specific subject-related and academic vocabulary
- experiment with new academic words and phrases
- use mental images to remember new information
- group together sets of things—vocabulary, structures—with similar characteristics, using graphic organizers like Venn Diagrams
- identify similarities and differences between various rhetorical patterns, for example, essay structure, in English and in first language
- look for patterns and relationships
- use previously acquired knowledge to facilitate a learning task
- associate new words or expressions with familiar ones, either in English or in first language
- find information, using print and online materials like dictionaries, textbooks and articles, and grammars
- use word maps, mind maps, diagrams, charts or other graphic representations to make information easier to understand and remember

- place new words and expressions in context to make them easier to remember
- use induction to generate rules governing language use
- seek opportunities outside of class to practise and observe
- perceive and note unknown words and expressions, noting also their context and function

Metacognitive

- make a plan in advance about how to approach different academic language learning tasks
- plan in advance to listen or read for key words
- monitor own understanding while listening or reading, and effectiveness and accuracy while writing or speaking
- monitor own speech and writing to check for persistent errors
- be aware of own strengths and weaknesses, identify own needs and goals, and organize strategies and procedures accordingly
- evaluate own performance or comprehension at end of a task
- keep a learning log
- know how strategies may enable coping with challenging academic texts containing unknown elements
- identify problems that might hinder successful completion of a task, and seek solutions

Social/Affective

- initiate and/or maintain interaction with others
- seek the assistance of a classmate or teacher to interpret academic texts
- work co-operatively with peers in small groups
- work with others to solve academic language and task problems and to get feedback on tasks

(continued)

Strategies for Second Language Acquisition (continued)

- participate in brainstorming and conferencing as prewriting and postwriting exercises
- repeat new words and expressions occurring in class discussions, and practise using them in appropriate academic contexts
- use positive self-talk to feel competent to do the assigned task as well as to reduce anxiety related to the task
- be willing to take risks and try unfamiliar tasks and approaches
- experiment with various forms of expression, and note their acceptance or non-acceptance by more experienced speakers
- participate in shared academic reading experiences
- understand that making mistakes is a natural part of language
- indicate lack of understanding verbally using the correct register for the situation
- ask for guidance when new and more specific vocabulary and expressions are needed
- invite others into discussions
- use the other speaker's words in subsequent discussion or debate
- use a simple word or words similar to the concept to convey, and invite correction (for example, warm dry wind from the Rockies for Chinook)
- acknowledge being spoken to

B. Language Use Strategies**Interactive**

- repeat part of what someone has said to confirm mutual understanding
- summarize the point reached in a discussion to help focus the talk (for example, In other words, you mean/what we're saying is...)
- ask follow-up questions to check for understanding (for example, Am I making myself clear? Do you understand?)
- use suitable phrases to intervene in a classroom discussion (for example, I'd like to add to that point.)
- start again, using a different tactic, when communication breaks down (for example, What I meant to say is...)
- self-correct if errors lead to misunderstanding
- ask for confirmation that a form is correct (for example, Is that right?)
- ask for clarification, repetition, or examples to aid understanding
- interpret and assess verbal and non-verbal feedback from a conversation partner or audience member (for example, nodding head, looking puzzled)

Interpretive

- use gestures intonation and visual supports to aid comprehension
- make connections between academic texts on the one hand and prior knowledge and personal experience on the other
- use illustrations to aid reading comprehension in complex academic texts
- determine the purpose of listening in informal and academic situations
- look and listen for key words
- listen selectively based on purpose
- make predictions about what is expected to be heard or read, based on prior knowledge and personal experience
- use knowledge of the English sound-symbol system to aid in oral reading
- infer probable meanings of unknown words or expressions from contextual clues
- prepare questions or a guide to note down information found in various texts
- use key content words or discourse markers to follow an extended text
- reread several times to understand complex ideas
- summarize information gathered
- assess own information needs before listening, viewing, or rereading difficult/complex material

(continued)

Strategies for Second Language Acquisition (continued)

- use skimming and scanning to locate key information in texts

Productive

- mimic what the teacher says
- use a variety of resources to increase vocabulary
- use new vocabulary in context
- copy important information from lectures or the board
- use illustrations to provide detail when producing one's own texts
- use various techniques to explore ideas at the planning stage, such as brainstorming, graphic organizers, or keeping a log of ideas
- use knowledge of sentence patterns typical of various subject areas to form new sentences
- be aware of and use the writing process: prewriting (gathering ideas, planning the text, doing research, organizing the text), writing, revision (rereading, moving pieces of text, rewriting pieces of text), correction (grammar, spelling, punctuation), publication
- use a variety of resources to correct texts (for example, personal and commercial dictionaries, a thesaurus, editing and citing checklists)
- take notes when reading or listening to assist in producing own texts
- revise and correct final version of text
- apply grammar rules to improve accuracy at the correction stage

C. General Learning Strategies

Cognitive

- classify objects and ideas according to their attributes (for example, positive and negative aspects of El Nino)
- connect what is already known to what is being learned
- focus on and complete learning tasks

- record key words and concepts in abbreviated form—verbal, graphic, or numerical—to assist with the performance of learning task
- use mental images to remember new information
- distinguish between fact and opinion when using a variety of sources for information
- formulate key questions to guide research
- make inferences, and identify and justify the evidence on which these inferences are based
- use word maps, mind maps, diagrams, charts, or other graphic representations to make information easier to learn and remember
- seek information through a network of sources, including libraries, the Internet, videos, individuals, and agencies
- use previously acquired knowledge or skills to assist with new learning tasks
- use models

Metacognitive

- reflect on learning tasks with the guidance of a teacher
- reflect on individual thinking and learning process
- make choices about methods of learning
- discover how own efforts can affect learning
- rehearse and role-play before presentations, debates, discussions
- decide in advance to attend to the learning task
- divide an overall learning task into a number of subtasks
- make a plan in advance to approach a learning task
- identify own needs and interests
- keep a learning journal
- develop criteria for evaluating own work
- work with others, monitoring own learning

(continued)

Strategies for Second Language Acquisition (continued)

- take responsibility for planning, monitoring, and evaluating learning experiences
- manage the physical working environment

Social/Affective

- watch and copy the actions of successful students in educational settings
- seek help from others
- follow own natural curiosity and intrinsic motivation to learn
- participate in co-operative group learning tasks
- choose learning tasks that enhance understanding and enjoyment
- be encouraged to try, even though mistakes may be made
- take part in group decision-making processes
- use support strategies to help peers persevere at learning tasks (for example, offer encouragement, praise, ideas)
- take part in the group problem-solving process
- use positive self-talk to feel competent to do the task
- be willing to take risks and try unfamiliar task and approaches
- monitor own level of anxiety about learning tasks, and take measures to lower it if necessary (for example, deep-breathing, laughter)
- use social interaction skills to enhance group learning activities
- divide an overall complicated academic tasks into a number of sub-tasks
- develop criteria to evaluate own work
- take responsibility for planning, monitoring, and evaluating complex academic language learning tasks
- work with others to monitor own learning
- reflect on learning tasks with the guidance of the teacher
- reflect upon own thinking processes and methods of learning

- choose from learning options
- keep a learning journal (for example, math journals, reflective journals)
- discover how own efforts can effect learning
- choose from learning options
- decide in advance to attend to the learning task

Cognitive

- listen for specific information
- learn routine patterns for science and math
- imitate sound and intonation patterns
- memorize new words by repeating them silently or aloud
- seek the precise subject-specific terminology to express meaning
- repeat words or phrases in the course of performing a language task
- make personal dictionaries
- experiment with new academic words and phrases
- use mental images to remember new information
- group together sets of things—vocabulary, structures—with similar characteristics (Venn Diagrams)
- identify similarities and differences between various rhetorical patterns (for example, essay structure) in English and own language
- look for patterns and relationships
- use previously acquired knowledge to facilitate a learning task
- associate new words or expressions with familiar ones, either in English or in first language
- find information, using print and online reference materials like dictionaries, textbooks, and grammars

How to Create a Summary

I. What Is a Summary?

A summary is a brief restatement of the content of a piece of text expressed in one's own words. It should be an accurate report of what the author says, without comment. Most summaries are about one quarter to one third of the original length of the text.

II. Steps in Writing a Summary:

1. Read the article completely without making any notes. If it is difficult, you may want to skim first. Your goal is to decide what the writer is saying.
2. Try to state the authors' main point in one or two sentences. Look for the thesis statement and underline or highlight it. If the idea in the thesis does not match the idea in the sentence(s) you wrote, you must adjust your sentence(s) to reflect the thesis idea.
3. After you are certain that you understand the author's main purpose, reread the text, this time, thinking about writing a summary; highlighting, underlining, and making marginal comments as you read. Find the main ideas that support the thesis. Also, locate the main ideas in each paragraph as well as the supporting ones. Only highlight the important words and phrases, not complete sentences or large chunks of information. Look at transitional markers showing how the parts are connected.
4. Reread the article, identifying sections of thought. These may be single or multiple paragraphs.
5. In your own words, write a sentence or two summarizing each thought group. If this is difficult, try writing a summary sentence for each paragraph. Revise and delete any repetitions.
6. First :
 - Begin with the author, the article's title, and the main idea.
 - Next, write your summary sentences. They should be in the same order as the information in the article. Connect ideas with appropriate transition markers. Use recombination to compress ideas.
 - Occasional quotations may be used, as long as they are cited properly. Try to use your own words as much as possible.
 - Conclude with a final statement that reflects the author's position, not your own.
7. Revising:
 - Check to make sure that your summary reflects the ideas of the original article.
 - Check to see if you have made any omissions.
 - Does your summary flow smoothly?
 - Is it the correct length?
 - Have you ask a peer for his or her comments?
 - Can he or she understand the gist of the main article through your summary?
 - Have you made suggested and valid changes?
 - Have you edited for spelling, punctuation, and grammar errors, especially those you make often?



Skimming and Scanning for Academic Purposes

- Preview the article by skimming. Skimming means reading on the surface rather than in depth.
- To skim you should:
 - Read the title of the passage.
 - Read any subheadings or bolded words or phrases.
 - Examine any charts, maps, graphs, statistics, pictures, or other visuals attached to the written passage.
 - Read the whole first paragraph. It is the introduction and contains the thesis statement telling what the focus of the passage is.
 - Read the topic sentence of each paragraph. It is usually the first sentence of the paragraph. A topic sentence acts as a mini thesis statement for that paragraph.
 - Read the whole final paragraph. It is the conclusion and usually sums up the main points of the passage.
- Skimming helps you activate prior knowledge you might have on the topic and aids you in preparing mentally for what you will be reading in detail.
- Continue by scanning. Scanning means looking for specific information in a reading passage.
 - Do not read every word.
 - Do not even read for the main idea.
 - Run your eyes over the page looking for key terms. These are the words that will lead you to your purpose for reading.
- To be a good scanner:
 - You must know the key words to look for.
 - Know synonyms or examples that go with the key words in case the key words are not stated the way you expected.
 - Do not waste time reading everything; simply look for the key words.
- A person who wishes to be a successful reader:
 - works to improve his or her vocabulary
 - knows which unknown vocabulary words are important to the understanding of a passage and finds their meanings through the use of context clues, the knowledge of word families and affixes, by asking a group member or, if necessary, by using the dictionary
 - learns to summarize information in one or more sentences or in a short paragraph
 - can paraphrase a passage in his or her own words
 - focuses on improving reading speed by using a number of reading strategies and by practising
 - is a good skimmer and scanner

Skimming helps a reader preview an article. Scanning helps a reader find answers to questions and look for specific information. These strategies also help prepare students for in-depth readings.



Note-Taking Symbols

And	&	Is less than	<
At	@	To increase/go up	↑
Century	c.	To decrease/go down	↓
Degree	°	Therefore	∴
Leading to; resulting in	→	Because	b/c
Money	\$	With	w/
Nothing	∅	Without	w/o
Number	#	Within	w/i
Paragraph	¶	Man; men	♂
Parallel	//	Woman; women	♀
Per	/	For example	e.g.
Percent	%	That is; in other words	i.e.
Plus	+	Around, approximately, circa	~
Repeated words	“ ”	Approximately	≈
See note about this.	*		→
This is important.	N.B.	Since 2000	2000
Equals	=	In 2000 and earlier	← 2000
Doesn't equal	≠		
Is greater/more than	>		



T-List Procedures

1. Choose an appropriate text. Try to find visuals to introduce the ideas of the text, and explain them by drawing out new vocabulary that will be necessary for the students to know as they listen to the reading.
2. Decide what types of words from the reading you want to want to exclude on the T-List. The idea is to omit the filler words usually left out of point-form notes. You should also create blanks for transition/connector words or certain vocabulary words on which you want to focus.
3. Rewrite the text on the T-List graphic. At the top on the left side above the T line, write "Main Ideas." At the top on the right side above the T line, write "Supporting Details." Underline the T line write the main topics on the left and the supporting details for each topic on the right, leaving out filler words and leaving blanks for the other types of words on which you want to focus.
4. Give the incomplete T-List to the students to be filled in while they are listening.
5. Read the article once rather slowly while students try to complete their T-Lists.
6. You may have to repeat the reading, but make sure to speed up to normal reading speed.
7. Once students are finished, you may have them check their answers with a partner if you like.
8. Go over the T-List with the class, filling in the blanks with a different coloured pen for visual clarity as the students tell you what is required.
9. Next, have students make suggestions about how to change their point-form answers to complete sentence answers. Record these suggestions in another, different coloured pen. Encourage students to make a number of suggestions for each sentence. Also encourage sentence combining through coordination, subordination, etc. Do this with just a few examples.
10. Have the students complete the rest of this activity on their own.
11. Finally, have the students write their version of the article using their notes.



How to Debate in Groups

As a class:

- discuss the structure and aims of a debate
- select the topic for debate

Small groups:

- compose a single sentence motion for the debate

As a class:

- choose the best motion
- select debating teams to include 6 (or an appropriate number of) members each
- choose 4 (or an appropriate number of) judges
- decide which team is the government and which is the opposition

Debating teams:

- determine main arguments to support their position
- record support for the main arguments
- predict key arguments the other side will make
- determine the order of speakers on their team
- formulate the content of the team's opening statements

(Important information should be recorded in point form on index cards to be used during the debates.)

Judges:

- formulate criteria for deciding which is the winning side
- predict key arguments to expect from both sides
- may listen in on planning sessions
- take notes during the debate

Teacher:

- flips a coin to see who will begin first
- times speakers carefully
- limits the first speaker to 3 minutes and others to 2 minutes
- ensures that teams take turns speaking
- allows students to take a minute between speakers to discuss next strategy

At the end of the debate, judges:

- present a summary of the debate to the class
- deliver their judgements and reasoning



How to Detect Bias

In some texts, the writer has an obvious bias that influences his or her attitudes toward a topic. It is necessary to be aware of bias when evaluating texts. Biased writing is subjective while factual writing is objective.

To determine bias, a reader must be aware of the differences between subjective and objective writing.

In subjective writing, the author

- expresses one specific point of view
- wishes to appeal to the reader on a personal level
- may make one-sided statements
- may express personal feelings and opinions
- may ask rhetorical questions
- may use emotionally charged language

In objective writing, the author

- appears to be neutral
- does not reveal personal feelings or opinions
- describes facts without including personal comments
- may state several points of view
- quotes the opinion of the author rather than his or her own



How to Evaluate a Website

Strategy 1: Identify the primary purpose.

Is the site

- an informational site?
- a promotional site?
- an educational site?
- an e-commerce site?
- a portal site, which is meant to act a jumping-off point for other sites on the Internet?

Look at the site's "domain"—the last part of the URL, or the uniform resource locator. This might help you figure out the site's purpose.

Some common domains:

<i>Domain</i>	<i>Type of Site</i>
.com	commercial, for-profit company
.edu	post-secondary educational site
.org	non-profit institute
.gov	government agency
.net	Internet-related network
.ca	Canada

Strategy 2: Navigate through the site.

- It should be simple to navigate through the web pages of a site.
- Are the navigation tools—buttons, scroll-bars, etc.—found in the same place on each page?
- Is it clear what is a link and what is not?
- Are common elements or colours found on every page? A well-designed website makes it clear to the browser on each page that he or she is still on the same website.

- Can you always reach the home page?
- Is contact information provided on every page?
- Is a link to a site map available at all times?
- Do you ever have to go through more than two links to reach the information you are looking for?
- Has the website creator provided you with helpful navigation tools such as a site-search option?

Strategy 3: Consider the quality of the content.

- Look for tools that make locating information easy. One such feature is a list of Frequently Asked Questions (FAQ). When a site has this feature it suggests that the web designer has tried to anticipate the kinds of questions users may have.
- Determine the quantity and quality of the links. Useful, well-chosen links show that the web creator or owner is knowledgeable in his or her area of expertise.
- Assess the information on the site itself. Is it accurate? It is authoritative? Has it been researched and well developed? Is there a list of "further readings"?
- Does the site indicate how current the information is? Is there an indication of when the page was last updated?
- Is the information presented in a professional manner? Are the pages loaded with or free from grammatical and spelling errors? Do the graphics and animations load quickly? Is the page attractive or unappealing to look at?



Verbs Used in Academic Tasks across the Curriculum

Administer	Copy	Express	Notice	Rotate
Agree	Create	Extend	Observe	Search for
Allow	Explore	Extrapolate	Obtain	Select
Alter	Express	Evaluate	Organize	Separate
Alternate	Demonstrate	Find	Outline	Set up
Analyze	Debate (the resolution)	Finish	Perform	Show
Apply	Deduce	Formulate	Permit	Simplify
Approximate	Decode	Gather	Persist	Sketch
Arrange	Decrease	Generalize	Place	Solve
Assess	Define	Graph	Plot	Specify
Associate	Derive	Group	Practice	State
Assume	Describe	Hypothesize	Precede	Sterilize
Attach	Design	Identify	Predict	Study
Attempt	Detect	Imagine	Prepare	Substantiate
Base	Determine	Immerse	Present	Substitute
Build	Develop	Increase	Prevent	Suggest
Calculate	Devise	Indicate	Probe	Summarize
Categorize	Dilute	Induce	Produce	Survey
Centre	Disagree	Inhibit	Prove	Test
Chart	Discard	Inquire	Rank	Trace
Check	Dismantle	Interpret	Rate	Transmit
Choose	Distinguish between/among	Investigate	Recall	Use
Classify	Distribute	Justify	Record	Utilize
Clear (off)	Dissolve	Label	Refer to	Vary
Comment on	Drain	Limit	Reflect	Verify
Compare	Draw	List	Reflect on	View
Complete	Employ	Locate	Refute	Write
Compose	Enhance	Magnify	Reinforce	
Compress	Equate	Mark	Relate	
Conclude	Estimate	Mark off	Repeat	
Conduct	Examine	Measure	Report	
Confirm	Exclude	Minimize	Represent	
Connect	Expand	Mix	Research	
Consider	Explain	Modify	Retrace	
Construct		Monitor	Review	
Contrast		Note	Rewrite	



Response Prompts

I wonder why...

I am concerned about...

I don't understand...

I would like to ask the author/speaker/producer...

Something that bothers me is...

I was surprised (angry, unhappy, moved)...

I want to know more about...

I predict...

I learned...

I would like to find...

What would happen if...

One thing I didn't expect was...

We must follow up by...

I think the purpose of this article (report, discussion, interview, etc.) is...

In order to really understand the concept (idea, proposal, etc.)...

My response/reaction to is...

A connection I see is...

To begin planning for this activity...





How to Analyze Editorial Cartoons

Editorial cartoons are a form of satire. They convey, through exaggeration or caricature and few or no words, relevant information about a complex topic.

Their purpose is to affect how people think or feel about issues.

Strategy 1: Use prior knowledge to identify the subject.

- Editorial cartoons only work because the viewer understands what is being discussed. This means keeping up with current events, trends, and world issues.
- Common subjects of editorial cartoons:
 - political, entertainment, and sports figures
 - public affairs or political decisions
 - important and controversial world issues
 - social customs, fashions, or habits

Strategy 2: Look for symbolism and other literary techniques.

- Editorial cartoons can deal with either specific ideas or general issues. Often the cartoonist will use symbolism to make the issue appeal to a larger audience. Objects in the cartoon can stand for countries, political groups, attitudes toward war, poverty, personality traits, and so on. Note, especially, any objects that are exaggerated. These are often symbolic objects.
- The cartoonist may also use irony to say one thing while meaning the exact opposite of what the words or visual imply. It is necessary to examine the words and visuals together. This type of humour is used by the cartoonist to get a message across more effectively than if it were directly stated or preached.
- Juxtaposition puts the object of the cartoon in a surprising or unexpected position that will make a serious point in a humorous way.

Strategy 3: Read the caption and any text.

- If there are words, they are there for a purpose and, therefore, important.

Strategy 4: Consider all the elements together

Ask yourself:

- What do the drawing, words, and caption mean when considered together?
- What point is being made about the object of criticism or subject of comment?
- Did the cartoonist achieve his or her goal? Did I laugh? Did the cartoon make me think? Were my opinions and/or feelings influenced in any way?



Presentation Evaluation Rubric

	5 Superior	4 At Standard	3 At Standard	2 Needs Improvement	1 Needs Improvement
Information is accurate and thorough.					
English grammar and spelling are accurate.					
Vocabulary used is appropriate to the topic and sports in general.					
The poster is attractive in terms of neatness, layout, and design.					
The presenter is able to speak about the material fluently and with accurate pronunciation.					



Preparing Interview Questions: A Student's Guide

One source of up-to-date information can be obtained through an interview. An interview will go well if you do some research and prepare well ahead of time. You will want to record the interview or videotape it so that you can analyze it later.

General strategies for preparing your questions:

1. Make sure your questions are clearly phrased and will get the answers you want. Try to anticipate what the interviewee might say and think of ways you can redirect, restate, or expand the questions if you do not get the desired response the first time. Have your partner check your questions. You may want to practise on him or her.
2. Avoid closed questions to which the interviewee can simply answer "Yes" or "No."
3. Phrase the questions so that your respondent is free to answer in his or her own way. Don't begin with phrases like "Don't you think...".
4. Avoid questions that are so vague the person may not know how to answer or to which the person's response may be just as vague as the question. For example, rather than asking, "Was life difficult in the past?", you could try the following ideas. You might ask, "What were the difficulties about living in the past?" To narrow the focus you could ask, "What were the three most memorable difficulties about life in the past?" This type of question forces your respondent to make the judgements and evaluations you need for your writing.
5. Don't ask things you can find out for yourself. Interview time should be used well.
6. You may want to give your interviewee a list of your questions beforehand. It is sometimes difficult for elderly people to think on the spur of the moment.

During the interview:

1. Ask your questions one at a time. Make sure the question is understood. Rephrase, explain, and/or exemplify, if necessary.
2. Listen carefully and take brief notes. (If you are recording the interview you will be able to expand on your notes later. Do this as soon as you can after the interview so that it will be fresh in your mind.)
3. If you are planning to quote, make certain that you record the person's words exactly. Ask the person's permission to use the quotation. Read the quotation back to the person to make sure it is accurate.
4. You will have to cross-reference any facts you learned with reliable sources.

Etiquette concerns:

Make sure to conduct yourself in a professional and polite manner. Call ahead of time to set up your appointment; introduce yourself and explain the purpose of your interview. Try to accommodate your respondent, as he or she is doing you a favour. Make sure he or she is comfortable with your questions. Ask if you can have permission to record the interview. Arrive on time for the interview. Do not overstay your welcome. After the interview, call or write to the interviewee to thank him or her for his or her valuable information and time.

If you have to check information or if you have questions after the interview has been conducted, you may call the interviewee, but only once.



Tips for Wording and Ordering Survey Questions

1. State the purpose of the survey.
2. Ask demographic questions if you wish to look for correspondences between groups.
3. Use simple and precise language and keep the questionnaire short.
4. Be sure that all questions are relevant to your purpose.
5. Avoid response categories that overlap.
6. Be sure that all categories are exhaustive, or leave space for "other."
7. Avoid loaded questions and built-in assumptions (e.g., Are you in favour of increasing the driving age to 18 to reduce traffic fatalities among teenagers?)
8. Be consistent in formatting questions.
9. Sequence questions logically, beginning with general questions and moving to specific questions.
10. Be sure that the questionnaire is neat, attractive, and free of errors.



Tone Vocabulary

Positive tone/attitude words

lighthearted
hopeful
confident
cheery
amused

elated
complimentary
passionate
exuberant
enthusiastic

optimistic
loving
sympathetic
compassionate
proud

Negative tone/attitude words**Anger:**

angry
disgusted
outraged
furious

wrathful
bitter
irritated
indignant

threatening
accusing
condemnatory
inflammatory

Humour/Irony/Sarcasm:

scornful
disdainful
contemptuous
sarcastic
cynical
condescending
critical
facetious

patronizing
satiric
sardonic
mock-heroic
bantering
irreverent
mock-serious
taunting

insolent
pompous
ironic
flippant
whimsical
amused

Sorrow/Fear/Worry:

somber
elegaic
melancholic
sad
disturbed
mournful

solemn
serious
apprehensive
concerned
fearful
despairing

gloomy
sober
foreboding
hopeless
staid
resigned

Neutral tone/attitude words

formal
objective
incredulous
nostalgic
ceremonial
candid
shocked
reminiscent
restrained

clinical
baffled
sentimental
detached
objective
disbelieving
questioning
urgent
instructive

matter-of-fact
admonitory
learned
factual
didactic
informative
authoritative



How to Write a TQT (Text Questioning Technique) Lesson

1. Pick your topic. Decide what your content objectives for the lesson will be.
2. Find a suitable text or create one of your own.
3. Find a good supporting visual or more than one if possible, to promote pre-activity discussion.
4. Write your questions from the text. Vary the kinds of questions you use, if possible, so that students will have to respond in different ways. To begin, use exact wording from the text in your questions and make sure you ask them in the order in which the answers occur. Ask a reasonable number of questions and make sure they require short answers. Remember, students have to listen as they write their answers. Ask questions with a number of parts (a, b, c, etc.) whenever possible in order to provide students with the opportunity to sentence combine and use more complex structures. (You may make your questions more difficult as you students progress.)
5. Develop brainstorming questions (to be used in the activation) around your visual, drawing out vocabulary the students will need in order to answer the questions about the text. Exploit your visual to develop both BICS and CALP where possible.
6. Look at your brainstorming questions, your text, your text questions and the answers you expect; then choose your language objectives for the lesson. Are there certain structures, vocabulary items, discourse features, language functions, etc. that jump out of the text itself, the brainstorming or text questions, or the answers? Zero in on these.
7. As you think through the development of your lesson, decide where you can incorporate the teaching of learning strategies.



Evaluating Ads

Strategy 1: Determine what first attracted your attention.

- The caption or slogan?
- The models or setting?
- The text?
- The brand name?
- The logo?

Strategy 2: Focus on the visual appeal.

Reacting to the ad visually:

- What was your first response to the ad?
- What are the colours in the ad? Do they seem to have been chosen to affect mood or do they have something to do with the product?
- What mood or feelings did the ad evoke? Did it shock you? Surprise you? Anger you? Make you anxious? Make you feel happy? Give you pleasure?
- Look at the models. Are they celebrities? Everyday people? Attractive people? Why?
- What are the models doing? Is their pose casual or is it meant to suggest a certain lifestyle?

Strategy 3: Consider the text and the claims that it makes.

Reacting to the print and the message:

- Is any of the text larger? Smaller? Why? (Usually, the message that is supposed to attract the target audience is written in larger type. This is called the "hook line." It often asks an interesting question or plays on words. It is like the hook in an essay and is meant to grab the reader's attention.)
- Find any words that limit the claim or detract from the product. These are called "qualifiers" in ads. They may use modals like "may," "should," "could" or expressions like "some" or "they say," etc. (What are the qualifiers in a cigarette ad?)

Strategy 4: Consider the subtext.

- Look at the other messages suggested by the ad.
- What does it say about values and beliefs of our society?
- According to the ad, what does society consider important?
- What does the good life look like? How do we attain happiness?
- Does the ad reflect reality? Do you agree with the values presented in the ad?



Creating a Photo (Visual) Paragraph, Essay, or Report

This task is a good one for practising the language functions of describing, explaining, and sequencing. It can also be used for comparing/contrasting and showing cause/effect.

- Decide on a topic that can be presented visually through pictures, images, charts, collages, graphs, maps, and/or another form of graphic.
- Plan what you want to describe or explain about the topic through your visuals.
- Collect, take, or create pictures that are appropriate. You may want to use Internet pictures and/or a digital camera. You also may scan photos.
- Organize your visuals on paper or in a computer file.
- Add maps, charts, statistics, etc. to your photos, pictures, or visual creations.
- Survey your pictures and support documents and decide if they present the information you intended to present.
- Remember to consider content as well as the quality of visuals you are presenting.

Writing Activity:

- Form groups of two.
- View each other's visuals.
- Decide what the organizational pattern of presentation of material is.
- Think carefully about the message the creator is trying to share.
- Create a graphic organizer that is appropriate for the organizational structure and write point-form notes about what you view and understand.
- Discuss your notes with the creator of the visual essay/paragraph.
- Formulate and produce a written piece that presents the visual information you have viewed.



Sort and Predict Graphic Organizer

Read the list of words on the left and sort them into four different categories by placing them in the boxes. For the words that you are unsure of, predict which category each would belong to. When selecting categories, try to make the fourth category different than any category that the rest of the class would think of. Use your creativity; be original! You may use **one** word in more than one category.

	1. _____	2. _____
	3. _____	4. _____



How to Write and Use a DIT Lesson

The Dictated Instructions Technique from the Foresee Approach can be used whenever there are instructions as part of an activity.

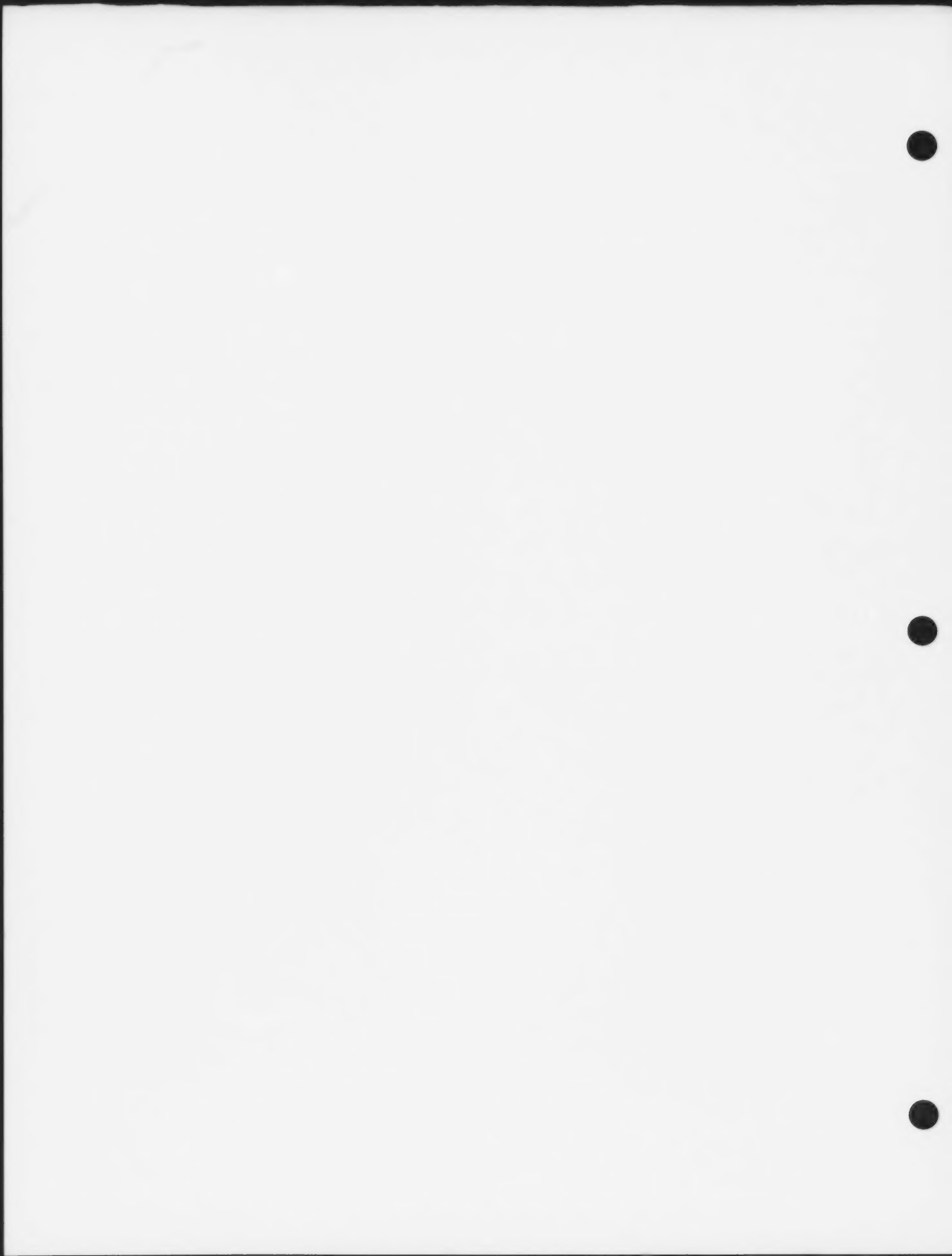
1. Choose a set of instructions you want to use for a listening and grammar activity. The directions for the procedures section of a science experiment work well.
2. Write out the directions so they begin with an imperative form of verb.
3. Remove all the imperatives and replace them with blanks.
4. Choose one other grammar structure you want to practise, like prepositions, for example, and remove these also, replacing them with blanks. You may choose to remove vocabulary words on which you plan to focus.
5. Dictate the instructions and have the students fill in the blanks with the appropriate words.
6. When they are done, check to make sure they are correct.
7. Focus on the words you left out and have the students review the uses for these parts of speech.
8. If you used the exercise to write up the directions for the procedures of an experiment, you can then teach students how to change their directions from imperative to passive voice, past tense, as they write up the procedures section of the completed experiment.



How to Express Numbers in Written Work

The following rules may be helpful when you must use numbers in your work.

1. Use numerals in dates, street numbers, room numbers, sums of money, telephone numbers, temperature readings, page numbers, numbered sections and chapters in books, statistics, and with a.m. and p.m. to record time.
2. Measurements are always expressed as numerals (e.g., The field was 10 m long.).
3. Numbers containing a decimal are written as numerals.
4. In English, we do not begin sentences with numerals. Either use words or rearrange the sentence (e.g., Fifty-four people attended the "how to stop smoking" session.).
5. Counted numbers can be expressed in writing if they consist of one word (e.g., The 100 m race was one of two he could choose.).
6. With large numbers, a part of the number can be written out to avoid a string of zeroes (e.g., The cost of the fleet of hydrogen cell fueled buses was 10.2 million dollars.).
7. In English, we usually use commas between hundreds and thousands, between hundred thousands and millions, etc. It is also acceptable to simply leave a space where the comma would be. (e.g., 1,000 OR 1 000; 2,363,428 OR 2 363 428).
8. A digit must precede a decimal (e.g., He ran the race in 0.9 seconds.).
9. Numbers below 101 are usually spelled out. Compound numbers between twenty-one and ninety-nine are hyphenated.
10. Round numbers over 101 are usually spelled out (e.g., Two hundred messages; one thousand viruses).
11. Do not use full metric terms with numerals; use the accepted abbreviations (e.g., The average person walks 3.3 km each day.).
12. Do not use a period after a metric abbreviation unless it is at the end of a sentence (e.g., The car can go 100 km without having to refuel.).
13. Use a hyphen between the numeral and a symbol when they are used to modify a noun (e.g., I am going on a 10-k walk to support breast cancer research.).
14. Use decimals rather than fractions in metric units (e.g., The cell phone is 10.45 cm long.).



Solving Math Word Problems

- Form groups of four.
- Turn on your tape recorders when you are ready to start.
- In your groups, carefully read over the math word problems for this unit. (Read out loud.)
- Talk among yourselves in English to make sure you know what each question is asking.
- If you are not sure, ask your teacher for direction and help.
- Record any new words in your personal dictionary.
- Once you are certain about the meanings of the word problems, work together to solve each problem.
- Talk yourselves through the problem, discussing each step you will take.
- If there are several ways to solve the problem, discuss each one.
- Follow these steps for each problem.
- When you are finished, turn off the tape recorder.



Mathematics Questions

Sports

1) Josephine has been throwing the discus since she was 12 years old. She has been able to determine that the path of the discus follows the shape of a parabola, depending upon her release angle. If she releases the discus at an angle of 40 degrees it follows a path described by the equation $h = -0.2 d^2 + 60d$.

Determine the maximum height of the discus.

Determine how long it takes the discus to get to the maximum height. Determine the maximum distance that the discus travels. If Josephine changes the launch angle to 41 degrees, the discus follows a path described by the equation $h = -0.3 d^2 + 70d$. Which launch angle gives her a greater distance and by how much?

2) Alfred decides that he would like build up his muscle strength. He measures the size of his biceps and finds them to be 88 mm. He starts a workout schedule and measures the increase in size of his biceps every day. At the end of the first day he finds that his biceps have grown 2 mm. At the end of the second day he measures his biceps and finds that they have grown by 1 mm. If the increase in size of his biceps continues at a rate of $\frac{1}{2}$ the previous days increase, determine the maximum size that his biceps will reach.

3) Mr. I. M. Fast is a sprinter and is in training for the Olympics for the country of Neutrality. His time for the 100 m is 12.4 seconds on June 1, 2003. On September 1, 2003 his coach determines that he can now run the 100 m in 11.8 seconds. At this rate, how long will it take for him to reduce his time to the world record (students can research the world record for the 100 m to determine what that record is)? On what date will he be able to run the 100 m in 8 seconds? Is this possible? Why or why not?

4) The amount of energy, E , measured in kilocalories per gram molecule, needed to transport a substance from the outside of a living cell to the inside of that cell is given by where C_1 represents the concentration of the substance outside the cell and C_2 represents the concentration inside the cell. If the

$$E = 1.4 \log_{10} \frac{C_2}{C_1}$$

concentration of a substance inside a cell is twice the concentration outside it, find the energy needed to transport the substance into the cell.

Environment

1) The Environmental Protection Agency has measured the level of pollutants found in Ross Lake in Flin Flon, Manitoba. They found that there were 350 parts per million in 2000. Three years later, they found that there were 280 parts per million. Fish can be introduced into the lake when the level reaches 120 parts per million. Determine the year when fish may be introduced into the lake.

2) Contamination of the environment with Strontium-90 from nuclear fall-out can pose very serious health hazards because its chemistry is similar to that of calcium. The half-life of strontium-90 is 28.8 years. If it gets into grass and hay, it can be incorporated into cow's milk along with calcium, and is then passed on to humans where it will lodge in the bones. Since its half-life is so long, it can cause radiation damage that can lead to cancer. Set up a function of time that gives the amount of strontium-90 at any time t .

- How long will it be before there is only 10% of an original amount of strontium-80 remaining?
- What percent of an original amount will remain after five years?
- Without using a calculator, determine how long it will be before only 25% of an original amount of strontium-90 is remaining.

3) The University of Manitoba has hired David Suzuki to give a speech on how to deal with climate change. The members of the organizing committee have been given the task of selling tickets. The prices of presold tickets have been set at \$15.00 for adults and \$7.50 for high school and university students. The committee has projected sales of 13 000 tickets. The organizer of the event wants to determine how many of each ticket are likely going to be sold. In order to do this, the number of presold tickets is going to be used. The committee members have a meeting, and it is established that they have not been keeping track of the number of each kind of ticket

(continued)

Mathematics Questions (continued)

has been sold. The tickets are identical until the seller punches a hole in the ticket. They don't remember how many holes they have punched, but they know that they have sold 548 tickets for \$7380. Using the presold tickets as an estimate, determine the total revenue from each kind of ticket that is likely going to be generated and the total revenue from all tickets.

Technology

1) A planet revolves around the earth following the path of an ellipse described by

$$\frac{(x-2)^2}{64} + \frac{(y+3)^2}{49} = 1$$

The position of the earth is located at the centre of the ellipse. Determine the shortest distance that an astronaut has to travel in order to intercept the planet.

2) At Cape Canaveral, a rocket takes off and travels 1.5 m in the 1st second, 4.5 m in the 2nd second, and 13.5 m during the 3rd second. How far will the rocket have traveled after 30 seconds? During the 10th second, determine the distance traveled by the rocket.

Health

1) The World Health Organization (WHO) estimates that smoking kills one person every 10 seconds. Determine how many people will die as a result of smoking after:

- d) 1 minute
- e) 1 hour
- f) 1 day
- g) 1 year

2) Health Canada predicts that approximately 45 000 Canadians will die due to smoking this year. Of these, more than 300 non-smokers will die of lung cancer, and 700 non-smokers will die of coronary heart disease caused by exposure due to second-hand smoke. Non-smokers comprise what percentage of the total deaths due to smoking?

3) Using the data found at <www.statcan.ca/english/Pgdb/health07a.htm> answer the following questions:

- a) Which province(s) has/have a greater percentage of female smokers?
- b) For all of Canada, which age group has the highest percentage of smokers?
- c) For all of Canada, which province has the highest percentage of smokers in the age group:
 - i. 12 - 14
 - ii. 15 - 19
 - iii. 20 - 34
 - iv. 35 - 44
 - v. 45 - 64
 - vi. 65 and over

4) Cobalt-60, which has a half-life of 4.6 years, is extensively used in medical radiology. The amount left at any time is given by

$$A(t) = A_0 \left(\frac{1}{2} \right)^{\frac{t}{4.6}}$$

where A_0 represents the initial amount and t , the time in years.

- a) What fraction of the initial amount will remain after
 - i. 9.6 years?
 - ii. 12 years and 6 months?
- b) How long will it take until there is only 10% of the original amount remaining?

Global Village

1) Scientists at the Virology Lab in Winnipeg, Manitoba are studying a new strain of bacteria. They have determined that an initial population of 20 bacteria will grow to 100 in 70 days. Determine what the doubling period is of the bacteria. Determine the length of time it will take the bacteria to grow to 100 000.

(continued)

Mathematics Questions (continued)

2) In 1995, the world population was 5.8 million people. According to the United Nation's forecast, the population will grow to 8.0 billion by 2025. Suppose this prediction were true. What is the average annual growth rate?

3) At the University of Manitoba in a class of students studying first year calculus, the students sit in rows. Each row contains 10 desks. Students are creatures of habit, and once they sit in a particular row, they tend to continue sitting in the same row class after class. Sitting in the second row of desks, there are five students from Hong Kong, three students from Germany, and two students from India. Determine the number of ways of arranging these ten students in the row if:

- a) the students of the same nationality must sit together
- b) the students from India must sit at the left end of the row
- c) the German students cannot sit together



APPENDIX 24: TEACHING AND LEARNING EAL IN THE SENIOR YEARS

This section explores some important ideas and resources for reflecting on and planning for teaching and learning in the EAL classroom.

Reflections on Effective EAL Instruction

The Role of the Teacher

The teacher is the key to success in the EAL classroom. Effective teaching demands a broad range of teacher knowledge and skills, both in EAL and in additional language pedagogy. In addition, teachers of EAL for academic purposes must be proficient speakers of English, must have a good understanding of cultural processes and North American secondary and post-secondary environments, and must possess a strong background in a variety of additional language teaching, reading, and writing methodologies. Furthermore, teachers will benefit from experience, professional development, and expertise in

- responding to diversity in the classroom and using multilevel groupings
- co-operative learning and student-centred learning
- multi-media and computer-assisted learning
- resource-based language learning

Teachers should continue to engage in professional development in order to maintain or improve their proficiency in EAL programming and keep their teaching skills current.

The classroom climate created by the teacher cannot be overemphasized. Students will respond positively to an encouraging teacher and a warm, supportive, and accepting learning environment. Clear expectations and strong classroom management skills are necessary to allow students to perform to their potential.

Student Motivation

When students value their learning, believe they can succeed, and feel in control of the learning process, they develop motivation or the desire to learn. Teachers can foster students' motivation to learn by

- instilling in each student a belief that he or she can learn
- helping students become aware of their own learning processes, and teaching them strategies for monitoring and enhancing these processes
- assigning tasks and materials of appropriate difficulty, and making sure that students receive the necessary instruction, modeling, and guided practice to be successful

- communicating assessment processes clearly so that students understand the criteria by which progress and achievement are measured
- helping students set realistic goals to enhance their learning
- helping students celebrate their own and classmates' learning progress and achievements within the school community and the broader community
- ensuring that instruction is embedded in meaningful learning events and experiences
- modeling personal enjoyment of English language learning, and communicating the value of learning another language for later success in the world beyond the classroom
- involving students in the choice of themes, topics, resources, and activities around which learning experiences will take place, to foster a sense of ownership
- creating inclusive, risk-free classroom communities where curiosity is fostered and active involvement in the learning process is valued and shared
- providing uninterrupted time for sustained engagement with appropriate English print and non-print resources
- providing collaborative learning experiences that enable students to exchange ideas and perspectives, develop a sense of purpose, and build a sense of community

Modes of Communication

Because of the focus on using language to communicate in specific contexts with a particular purpose or task in mind, three modes of communication are used to organize some of the specific learning outcomes rather than the traditional language arts (reading, writing, listening, speaking, viewing, and representing).

Interaction is most often direct, face-to-face oral communication. It can also take the form of written communication between individuals using a medium such as email where the exchange of information is immediate. It is characterized principally by the opportunity to negotiate meaning actively. Negotiating meaning involves working to make oneself understood and to understand others. Interactive communication generally requires more speed but less accuracy than the other two modes.

Interpretation is receptive communication of oral and written messages in contexts where the listener or reader is not in direct contact with the creator of the message. While there is no opportunity to ask for clarification, there is sometimes the possibility of rereading or listening again, consulting references, or figuring out meaning in other ways. Reading and listening will sometimes involve **viewing** and interpreting visual elements such as illustrations in books or moving images in television and film. Interpretation goes beyond a literal comprehension to include an understanding of some of the unspoken or unwritten meaning intended by the author or speaker.

Production is communication of oral and written messages in contexts where the audience is not in personal contact with the speaker or writer, or in situations of one-to-many communication (e.g., a lecture or a performance where there is no opportunity for the listener to interact with the speaker). Oral and written presentations will sometimes be enhanced by **representing** the meaning visually, using pictures, diagrams, models, drama techniques, or other non-verbal forms of communication. Greater knowledge of the language and culture is required to ensure that communication is successful because the participants cannot directly negotiate meaning.

Three Types of Language Learning

As students actively use the language arts, they engage in three kinds of language learning:

- **Students learn language:** Language learning is a social process that begins in infancy and continues through life. Language-rich environments enhance and accelerate the learning process.
- **Students learn through language:** As students listen, read, or view, they focus primarily on making meaning. Students use language to increase their knowledge of the world.
- **Students learn about language:** Knowledge of how language works is a subject and a discipline in itself and is fundamental to effective communication.

These three kinds of language learning are integrated in the classroom. Students may engage in learning tasks principally to make sense of the world. In the process of learning through language, however, their facility with language and their knowledge about language increases.

Developing Language Competence

Language competence is a broad term which includes not only knowledge about the language, but also the ability to use that knowledge to interpret and produce meaningful texts appropriate to the situation in which they are used. Language competence is best developed in the context of activities or tasks where the language is used for real purposes—in other words, in practical applications. Tasks involve students in understanding, manipulating, producing, or interacting in English while their attention is principally focused on meaning rather than form. Activities or tasks will be chosen based on the needs, interests, and experiences of students. The vocabulary, grammar structures, text forms, and social conventions necessary to carry out the task will be taught, practised, and assessed as students are involved in various aspects of the task itself, not in isolation.

Teaching the Form of the Language

Teaching the form of an additional language has been the topic of much discussion but there is still a need for more research to clarify many issues that remain unresolved. However, we can make the following observations with some certainty:

- Exposing students to the language without explicitly teaching its structures and formal properties is not enough to enable most students to become fluent.
- Teaching grammar through exercises that are unrelated to meaningful communication will not help students improve their language competence.
- Activities or tasks which focus on the form of the language should take up a relatively small part of the overall class time. The majority of classroom time should be spent on communicative activities, in other words, on activities where the focus is on meaning.
- Students cannot be expected to master a particular structure after a single lesson on it. They need to be exposed to the structure repeatedly, in a variety of situations, and have the opportunity to use it over an extended period of time before it will be learned.

How does the teacher decide when to introduce specific structures or forms? In a program that takes a task-based or content-based approach, the choice of grammar structures or forms to work on explicitly is based on the immediate needs of the students. In other words, students learn about the structures and forms they will need to use in order to carry out the task that is the focus of the lesson. This way of ordering the teaching of grammar requires a careful analysis of the tasks the students will work on to determine which structures are essential and in which context they will be used. With careful planning, the teacher can ensure that specific points are revisited regularly in a variety of contexts.

An effective method of raising the students' consciousness of particular structures or rules is to help them discover the rule themselves. Once they are aware of the structure, they will be more likely to notice it in texts they are working with and thus have their learning reinforced. Grammatical problem-solving activities can be used to help students discover patterns from a number of examples of correct and incorrect sentences. If students work in pairs or small groups and are able to do the activity in English, they will also be getting an opportunity to use the language in an authentic situation, in this case to learn something new. Even if students do the activity in English and are guided by the teacher, they will still benefit from the analysis.

Structural exercises can be effective tools for teaching grammar provided they meet certain criteria:

- Sentences used for the exercises should be taken directly from students' own productions or from texts they are using in their communicative activities.
- Understanding the meaning of the sentence should be necessary in order to do the exercise.
- Students should have the opportunity to use the structure they have just analyzed to accomplish the task that is the focus of the lesson.

Teaching Oral Production

Oral production activities are distinct from activities where there is interaction (and the possibility of negotiation of meaning) between individuals. Although they are not interactive, they must still be communicative. This means that they will have the following characteristics:

- The topic is interesting and/or relevant to the students.
- The student producing the text has a real purpose (e.g., sharing factual information, expressing a personal opinion).
- The text is presented to a real audience (a person or persons other than a teacher who is listening for the sole purpose of teaching and assessing the student).
- Real communication takes place; in other words, the audience does not already know what the speaker is telling them.
- The students presenting the text usually have an opportunity to plan and prepare what they are going to say beforehand and to rehearse their presentation. For this reason, greater accuracy, better pronunciation and intonation, and greater fluency can be expected than in interactive situations.

Developing Interactive Fluency

Research has shown that students need more than comprehensible input to learn an additional language. They also need output; in other words, they need opportunities to interact with others and to try to make themselves understood, if they are to develop accuracy and fluency. Producing language helps learners to notice gaps in their knowledge and then to try to find the correct form, in order to be understood.

Studies have also shown that nearly two-thirds of the talking that goes on in classrooms is done by the teacher. This is rather alarming when we know that interaction is essential for learning a language. If the teacher controls dialogue by asking questions of one student at a time, each individual student will have very little opportunity to try out new vocabulary and structures. Students must have the opportunity to interact in English in authentic situations as much as possible.

Face-to-face interaction is different from other situations (e.g., reading a story, writing a letter, listening to a song, speaking to a group) in that negotiation of meaning is possible. The speaker knows more or less immediately whether or not their message has been understood. The conversational partner may indicate lack of understanding, ask for clarification, or simply respond, thinking they have understood. This back and forth process continues until a mutual understanding has been reached.

However, interactive activities, if they are to be effective, cannot be left to chance. They must be carefully planned and structured. Here are some suggestions:

- By using co-operative mixed-level groups, the teacher provides students with many opportunities to express themselves, to use the language in communicative situations, and to test their ability to get their message across. It is important to teach and assess co-operative skills related to using the English language in co-operative groups.
- Students can be taught strategies for making themselves understood, without having recourse to their first or other languages when they do not know or cannot remember a word or phrase. Strategies include using gestures, synonyms, paraphrasing, looking at word lists posted in the classroom, and so on.
- Students often need to be encouraged to be a little more precise, a little more accurate. However, in interactive activities the focus should remain on the meaning the student is trying to convey. It is possible to respond to the message and yet push students to improve their language. If they are using a general word, for example, respond to what they are saying while at the same time using a more precise word. If they make a mistake in grammar or pronunciation, respond to the content (the meaning) of their message, but incorporate the correct structure or pronunciation into your response. If the idea is vague or very general, ask students to provide more details, justify their opinion, or be more precise.
- Students can learn to use similar techniques in their interactions with their fellow students. This involves strategies like asking questions to get more information or a clearer answer, indicating when one has not understood, or repeating what was said in a different way to check for understanding.
- None of these suggestions will work unless the classroom provides a safe environment for students, an environment where they know they can make mistakes without being ridiculed or punished. Students need to understand that taking risks (trying out new vocabulary and structures, using language that they are not quite sure of, trying to say things they want to say but have not yet learned fully) and making the inevitable mistakes are part of the process of effective language learning.

Teaching Written Interpretation

Advanced EAL learners in the Senior Years have the advantage that they already know how to read in their first language and can transfer many of their skills and strategies to the task of reading English, their second or additional language. The writing system may be different, but students already understand that a written text has a message and that it is made up of individual words. They know that they don't always have to understand every word, they can read ahead and come back, or they can just guess at the meaning of words they don't know, and so on.

Written texts used in the early stages of learning English should have the following characteristics:

- They are as authentic as possible. (Authentic means they were written for speakers of English and not for second/additional language learners.)
- Syntax is simple, sentences are short, and texts are also short or made up of short sections.
- High frequency vocabulary is used.
- The meaning is clarified by the use of illustrations and other contextual clues.
- The topic is familiar to the student.
- The content is interesting and/or relevant to the student.

However, as students become more proficient, the written texts to which they are exposed can more closely resemble the normal language of a native speaker with fewer visual supports. In order for students to continue to learn, input should always be just a little beyond their current capabilities. Students in the advanced stages of EAL acquisition need exposure to texts in the subject (content) areas that are likely to be encountered in Senior 4 and post-secondary settings.

The term "written interpretation" is a reminder that the objective of reading is to interpret the meaning of the text. Activities such as reading aloud, while they have their place in the second/additional language classroom, are more suited to practising good pronunciation or learning the correlation between sounds and spelling than to developing comprehension.

Teaching Written Production

Research on teaching writing shows that student achievement is higher when the teaching approach emphasizes writing as a **process**, rather than writing as a **product**.

In the traditional **product-oriented approach**, form and correctness are the focus of attention. The teacher provides drills on specific skills, makes many of the major decisions for the students (e.g., topic, length, what form the text will take), and is the only audience. Students are asked to concentrate on following rules, to work alone, and to constantly pay attention to technical matters such as grammar and spelling. They usually write only one version of the text, which the teacher corrects. Because no one else will read the writing, students often pay little attention to the teacher's comments.

Research has clearly shown that a concentration on grammar actually slows students' development as writers because the insistence on correctness reduces their willingness to experiment and invent. Grammar instruction that relates directly to students' writing, and is in response to their needs, is effective in improving writing.

The experience of classroom teachers and research conducted during recent years shows that a **process-oriented approach** to teaching writing is more successful. In this approach, students are led through a series of stages in their writing and gradually learn to use this process independently.

Strategic Learning and EAL

Fostering strategic learning in the English language classroom is essential for ensuring effective and lifelong learning. To develop high levels of language skills, including literacy, students need instruction in the strategies that skillful learners use in approaching language tasks. Students need to be taught learning strategies through demonstration, explicit instruction, guided practice, and independent practice with feedback and support. Therefore, students in *Senior 4 EAL for Academic Success* are encouraged to acquire and apply a wide range of strategies to enhance their learning and their ability to communicate effectively.

Strategies are systematic and conscious plans, actions, and thoughts that learners select and adapt to each task. Strategies are often described as knowing what to do, how to do it, when to do it, and why it is useful. The importance of learning strategies in this course is evident by the fact that general learning outcomes 6-8 are specifically focused on metacognitive, cognitive, and social and affective learning strategies. (An alternative delineation is language learning strategies, language use strategies, and general learning strategies, all of which would be further broken down into metacognitive, cognitive, and social and affective strategies.)

Language learning strategies refer to actions taken by learners to enhance their own language learning. These strategies are subdivided into three categories: **cognitive**, **metacognitive**, and **social/affective**.

- **Cognitive language learning strategies** operate directly on the language. These include such strategies as using different techniques for remembering new words and phrases, deducing grammar rules or applying previously learned rules, guessing at the meaning of unknown words, and using a variety of ways to organize new information and link the new information to previously learned language.
- **Metacognitive language learning strategies** are higher-order skills that students use to manage their own learning. These include planning for their language learning, monitoring their own language learning, and evaluating their success in language learning.
- **Social language learning strategies** are actions learners take that involve interactions with native speakers of the English language or interactions with other learners of English in order to assist or enhance their own language learning. For example, asking another student for help to understand a text written in English, or asking a native speaker for an unknown vocabulary item would be social language learning strategies.

- **Affective language learning strategies** are methods students use to regulate their emotions, motivation, and attitudes to make themselves more conducive to learning. Language use strategies are actions taken to enhance communication. These strategies are often used with no intention of trying to acquire language, but instead with the intention of improving communication. The language use strategies in The Common Curriculum Framework for EAL for Academic Success are organized according to the three communicative modes: **interaction, interpretation, and production.**

General learning strategies refer to actions taken by learners to enhance their own general learning. As with language learning strategies, general learning strategies are divided into three sub-categories: **cognitive, metacognitive, and social/affective.** There is a distinctive similarity between language learning strategies and general learning strategies; the determining difference, however, is whether the purpose of the application of the specific strategy is the learning of the language or of other concepts. Often, the other concepts include subject-area concepts, such as social studies or health concepts.

The strategies that students choose depend on the task they are engaged in as well as on other factors, such as their preferred learning style, personality, age, attitude, and cultural background. Strategies that work well for one person may not be effective for another person or may not be suitable in a different situation. For this reason, it is not particularly useful to say that students should be able to use specific strategies at a particular grade level. The goal is to help students become more active, more self-directed, more autonomous, and more expert in choosing the strategies that work best for them. Effective language learners tend to use more strategies and to apply them in a more appropriate fashion than less effective learners. A global list of strategies that will benefit students can be found in the **Appendices** of this document.

Strategies should be introduced as they are needed. When strategies are introduced and explained in terms of their value to the learner and are demonstrated and practised over time, they can produce long-lasting, significant improvements in the students' ability to construct meaning, acquire language, and achieve the *Senior 4 EAL for Academic Success* learning outcomes. All students benefit from strategic instruction, but individual students need varying degrees of support in learning and using strategies.

Inclusive Teaching Approaches

Every classroom is a diverse classroom. Students bring with them a rich array of cultural backgrounds, learning styles, personal interests, and characteristics. It is important for teachers to consider the needs of all the learners in the classroom. The charts that follow provide an overview of points to consider, and useful strategies for adapting instruction for diverse students.

Balanced Instruction

Planning for balance while ensuring for sufficient instruction and practice in all the outcomes defined for this course is a particularly challenging task. Teachers strive to incorporate a variety of instructional strategies and teaching and learning activities in their classrooms. This includes varying instructional groupings and methods to meet the learning needs of a wide range of students.

Teachers also strive to ensure balance in their delivery of the curricular learning outcomes. They are attentive to the need for integrating the eight general learning outcomes to achieve balanced instruction. They are careful to provide instruction in linguistic elements, such as grammar or vocabulary, within the context of concrete applications.

Themes, integrated units, and learning sequences provide opportunities for explicit instruction in many learning outcomes. Instructional activities such as mini-lessons are necessary to introduce, develop, or reinforce particular skills. In every planning decision, reflective teachers ask:

- What is an appropriate balance for my students?
- Am I achieving that balance in my classroom, both in the short term and the long term?
- Is my instruction helping students to achieve the appropriate learning outcomes?

Teachers strive for balance in their classrooms. A communicative approach requires the teacher to be a guide and a language model. One of the main functions of the teacher is to discover or invent ways of encouraging students to communicate meaningfully with each other. Instead of actively directing and controlling all activities, the teacher will set up conditions for meaningful practice, and then take on roles such as observer, facilitator, resource person, catalyst, challenger, and encourager.

Adaptation Strategies

"Differentiating the curriculum" refers to adjustments in content, teaching strategies, expectations of student mastery, and scope and sequence. Students work at different paces. Gifted students are more likely to develop study and production skills, experience success, and feel challenged by instruction that encourages learners to master information more quickly. For more detailed information and resources on differentiated instruction, see *Success for All Learners*, Manitoba Education and Training (1996).

Strategies for the Second/Additional Language Classroom

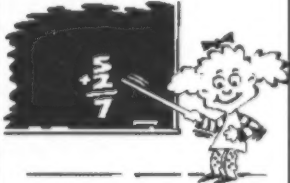
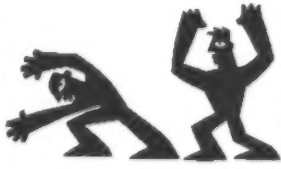
Suggested student adaptation strategies for the second/additional language classroom may include, but are not limited to, the following:

- researching and discussing cultural issues/perspectives in more depth
- posing questions that involve inferencing and focusing on complex cross-curricular themes or global problems
- explaining reasons for taking a certain position or making a specific decision, both orally and in writing, in the target language
- creating texts in various forms, etc., showing multicultural perspectives of a specific theme or having a futuristic twist
- being held accountable for additional listening comprehension tasks
- creating experiences and performances that reflect the results of research, interviews, or surveys in the target language
- retelling a story or experience from other content areas in the target language
- writing editorials, letters, etc. to target language newspapers in Canada
- emailing articles, commentaries, reviews, etc. to target-culture schools, publications, organizations, newspapers, or magazines
- being given assignments involving more sophisticated computer research and reporting in the target language
- receiving handouts, information for web searches, etc. in the target language
- processing a greater volume of any given print material
- being given the option of independent language projects of choice

Additional Adaptations

In the following pages, several charts outline strategies for adapting learning activities to accommodate students with diverse talents, exceptionally able students, and students with specific learning needs. Teachers may wish to refer to these during their instructional planning and as a check to be sure that they are using inclusive classroom practices.

INSTRUCTIONAL STRATEGIES FOR STUDENTS WITH DIVERSE TALENTS

Intelligence	Students learn best by:	Planning questions for teachers	Learning activities
Linguistic 	Verbalizing, hearing, and seeing words	How can I use the spoken or written word?	Creative writing Formal speech Humour or telling jokes Impromptu speaking Journal or diary keeping Oral debate Poetry Storytelling Words—used in reading, writing, speaking
Logical-Mathematical 	Conceptualizing it, quantifying it, thinking critically about it	How can I bring in numbers, calculations, logic, classifications, or critical-thinking skills?	Abstract symbols, formulas Calculation Counting Deciphering codes Finding patterns Forcing relationships Graphic organizers Number sequences Outlining Problem solving Syllogisms
Spatial 	Drawing it, sketching it, visualizing it	How can I use visual aids, visualization, colour, art, or metaphor?	Active imagination Colour schemes Designs and patterns Drawing guided imagery Mind mapping Painting pictures Pretending Sculpture/models
Bodily-Kinesthetic 	Dancing it, building a model of it, doing a hands-on activity related to it	How can I involve the whole body or use hands-on experience?	Body language Dancing—folk or creative Drama/acting Inventing Martial arts Mime Physical gestures Physical exercises Playing sports and games Role-playing

Adapted from the *Nebraska K-12 Foreign Language Frameworks*, 1996, as cited in the *New Jersey World Curriculum Framework*, 1999.

INSTRUCTIONAL STRATEGIES FOR STUDENTS WITH DIVERSE TALENTS

Intelligence	Students learn best by:	Planning questions for teachers	Learning activities
Musical 	Singing it, chanting it, finding music that illustrates it, putting on background music while learning it	How can I bring in music or environmental sounds, or set key points in a rhythmic or melodic framework?	Creating music Environment sounds Humming Listening to music Music performance Music composition, creation Percussion vibrations Rhythmic patterns Singing Tonal patterns Vocal sounds and tones
Interpersonal 	Working on it with another person or group of people	How can I engage students in peer-sharing, co-operative learning, or large-group simulation?	Collaboration skills Co-operating Co-operative learning Empathy practices Giving feedback Group projects Intuiting others' feelings Listening Person-to-person communication Receiving feedback Sensing others' motives Talking to others Teamwork/division of labour
Intrapersonal 	Relating it to a personal feeling or inner experience	How can I evoke personal feelings or memories, or give students choices?	Being alone Complex guided imagery "Centering" practices Emotional processing Focusing/concentration skills Higher-order reasoning "Know thyself" practices Metacognition techniques Mindfulness practices Silent reflection methods Telling about feelings Telling about thinking Thinking strategies
Naturalist-Physical World 	Observing it, classifying it, appreciating it	How can I relate the student's learning to the physical world?	Discovering, uncovering Observing, watching Forecasting, predicting Planting Comparing Displaying Sorting and classifying Photographing Building environments

Adapted from the *Nebraska K-12 Foreign Language Frameworks*, 1996, as cited in the *New Jersey World Curriculum Framework*, 1999.

INSTRUCTIONAL STRATEGIES FOR STUDENTS WITH DIVERSE TALENTS

Multiple Intelligences Grid of Ideas

MULTIPLE INTELLIGENCES GRID OF IDEAS The Olympic Games or Games of Life							
Verbal	Logical	Spatial	Bodily	Musical	Interpersonal	Intrapersonal	Naturalist
Biographies	Graphic arts	Greek architecture	Fitness	National songs	Teamwork	Individual achievement	Nutrition
Writing about heroes	Biochemistry	Pottery	Sports	Raps	Co-operation	Pride	Health
Historical fiction	Laws of physics	Painting	Practice	Practising music	Competition	Sense of accomplishment	Wellness
Myths	Statistics	Posters	Routines	Relaxation music	Sportsmanship	Logs	Biochemistry
Literature	Percentages	Photos	Regimens	Meditation	Coaching	Journals	Climate
News reporting	Logical thinking	Graphic organizers	Physical therapy	Composing	Mentoring	Psychology of peak performance	Culture
Expository writing	Sequences	Graphs	Conditioning	Performing	Global relationships	Endurance	Biofeedback
Features	Cause/effect	Visualization techniques	Experiences	Selecting appropriate music	Conflict management		Attitudes

Adapted from the *Nebraska K-12 Foreign Language Frameworks*, 1996, as cited in the *New Jersey World Curriculum Framework*, 1999.

INSTRUCTIONAL STRATEGIES FOR STUDENTS WITH DIVERSE TALENTS

Planning Model Using Bloom's Taxonomy

Bloom's Taxonomy is a model that focuses on six levels of thinking. The six levels roughly form a two-tiered arrangement that represents levels of complexity in thinking. Knowledge and comprehension are the lower or more concrete levels of thinking. Analysis, evaluation, and synthesis represent higher or more complex levels of thinking. The application level, which falls between the lower and higher levels, can be very complex depending on the task.

A variety of instructional strategies and products may be categorized for each level of thinking. Teachers who design a variety of learning activities that require different levels of thinking will provide appropriate opportunity for the diverse number of students whose thinking levels range throughout the spectrum.

Level		Definition	Instructional Strategies	Activities, Tasks, & Products
Lower, less complex, more concrete levels	Knowledge	Students recall information, recite, or write	- ask • define • describe - discover • identify - label • list • listen - locate • match • memorize - name • observe - recite • recognize - remember • research - select • state • tell	- books • diagrams • events - exams • facts in isolation - films • film strips - magazine articles • models - newspapers • people • plays - quiz • radio • recordings/records - tapes • text reading • vocabulary - workbook pages
	Comprehension	Students restate the information in their own words	- ask • change • compare - convert • defend • discover - distinguish • edit • explain - express • extend • generalize - give example • identify - illustrate • infer • interpret - listen • locate • match - observe • paraphrase - predict • relate • research - restate • rewrite - show symbol • summarize - transform • translate	- casual relationship - comparison of like/unlike items - conclusion/implication based on data - diagrams • films • filmstrips • graph - magazines • models • newspapers - outline • own statement • people - photograph • radio - response to questions • revisions - skit • speech • story • summary - tape recording • television

Adapted from the *Nebraska K-12 Foreign Language Frameworks*, 1996, as cited in the *New Jersey World Curriculum Framework*, 1999.

INSTRUCTIONAL STRATEGIES FOR STUDENTS WITH DIVERSE TALENTS

Planning Model Using Bloom's Taxonomy

Level		Definition	Instructional Strategies	Activities, Tasks, & Products
Higher, more complex, more abstract levels	Level depends on complexity of task			
	Application	Students apply the information on one or more contexts.	• apply • build • change • choose • classify • construct • cook • demonstrate • discover • dramatize • experiment • interview • list • manipulate • modify • paint • prepare • produce • record • report • show • sketch • solve • stimulate • teach • use guides, charts, maps	• artwork • collection • crafts • demonstration • diagram • diorama • diary • drama • forecast • illustration • list • map • meeting • mobile • model • paint • photographs • project • puzzle • question • recipe • scrapbook • sculpture • shifting smoothly from one gear into another • solution • stichery
	Analysis	Students understand component parts to be able to compare and contrast or categorize information.	• advertise • analyze • categorize • classify • compare • contrast • differentiate • dissect • distinguish • infer • investigate • point out • select • separate • solve • subdivide • survey	• argument broken down • chart • commercial • conclusion • checked • diagram • graph • parts of propaganda statement identified • plan • prospectus • questionnaire • report survey • report • solution • survey • syllogism broken down • word defined
	Synthesis	Students judge what they have analyzed and support their opinions.	• combine • compose • construct • create • design • estimate • forecast • hypothesize • imagine • infer • invent • predict • produce • rearrange parts • role-play • write	• advertisement • article • book • cartoon • experiment • formation of a hypothesis or question • game • invention • lesson plan • machine • magazine • new game • new product • new colour, smell, taste • news article • pantomime • play • poem • puppet show • radio show • recipe • report • set of rules, principles, or standards • song • speculate on or plan alternative courses of action • story • structure • television show
	Evaluation	Students create and/or gather pieces of information to form a novel thought, idea, product, or perspective.	• appraise • choose • compare • consider • criticize • critique • debate • decide • discuss • editorialize • evaluate • give opinion, viewpoint • judge • prioritize • recommend • relate • summarize • support • weigh	• conclusion • court trial • critique • debate • decision • defense/verdict • discussion • editorial • evaluation • group discussion • group • letter • news item • panel • rating/grades • recommendation • self-evaluation • standard compared • standard established • survey • valuing

Adapted from the *Nebraska K-12 Foreign Language Frameworks*, 1996, as cited in the *New Jersey World Curriculum Framework*, 1999.

INSTRUCTIONAL STRATEGIES FOR EXCEPTIONALLY ABLE (GIFTED) STUDENTS

Strategies for Exceptionally Able Students

To ensure success with exceptionally able students...

- allow for choice within assignments and projects.
- use compacting.
- allow students to make independent plans for independent learning.
- provide mentoring or apprenticeship with professionals.
- teach entrepreneurship.
- use theory of multiple intelligences.
- use tiered assignments which are more complex or abstract.
- use Socratic questioning.
- use critical and creative questioning strategies.
- use open-ended questioning strategies.
- use interdisciplinary units.
- allow in-depth enrichment learning.
- allow time with like-intellectual peers.
- use accelerated pace of instruction.
- allow dual enrollment or early admission opportunities.
- remove time and space restrictions to allow for a long-term integrated plan of study.
- provide more difficult or abstract resources.
- allow for concrete or real-life investigations and explorations.
- teach coping skills.
- allow students to suggest modifications in the content of their learning, the process which they use to learn, and the product they produce to show their learning.
- clearly communicate criteria and parameters to avoid students taking unacceptable risks or creative detours.

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Developing Intercultural Competence

Intercultural competence is a combination of knowledge, skills, and attitudes that enable individuals to communicate and interact across cultural boundaries. In this course these include the skills of finding information about English-speaking cultures, interpreting it in order to understand the beliefs, traditions, and cultural values of the English-speaking world as they impact on interpersonal communication, literature, the academic environment, and society in general, relating one's own culture to the cultures of English speaking peoples, and interacting with members of these cultures. In the process of developing these skills, language learners will acquire knowledge of various aspects of these cultures, a heightened awareness of their own, as well as knowledge of the processes of interaction between the two cultures. They will also work towards an attitude of increased openness, curiosity, and willingness to look at the world from the point of view of others.

Culture in this program is broadly defined as the general context and way of life, the behaviours and beliefs of a community of people whose history, geography, institutions, and commonalities are distinct and distinguish them to a greater or lesser degree from all other groups (Leblanc 44). The historical and contemporary elements of the culture from which the content is drawn may include

- historical and contemporary events
- significant individuals
- emblems or markers of national identity such as myths, cultural products, significant sites, and events in the collective memory
- public institutions and organizational cultures
- geographical space (regions, landmarks, borders, climate)
- social distinctions
- conventions of behaviour
- beliefs, taboos, perceptions, and perspectives

Choices about which elements to include should reflect the importance of the element within the culture, and the interests and developmental level of the students.

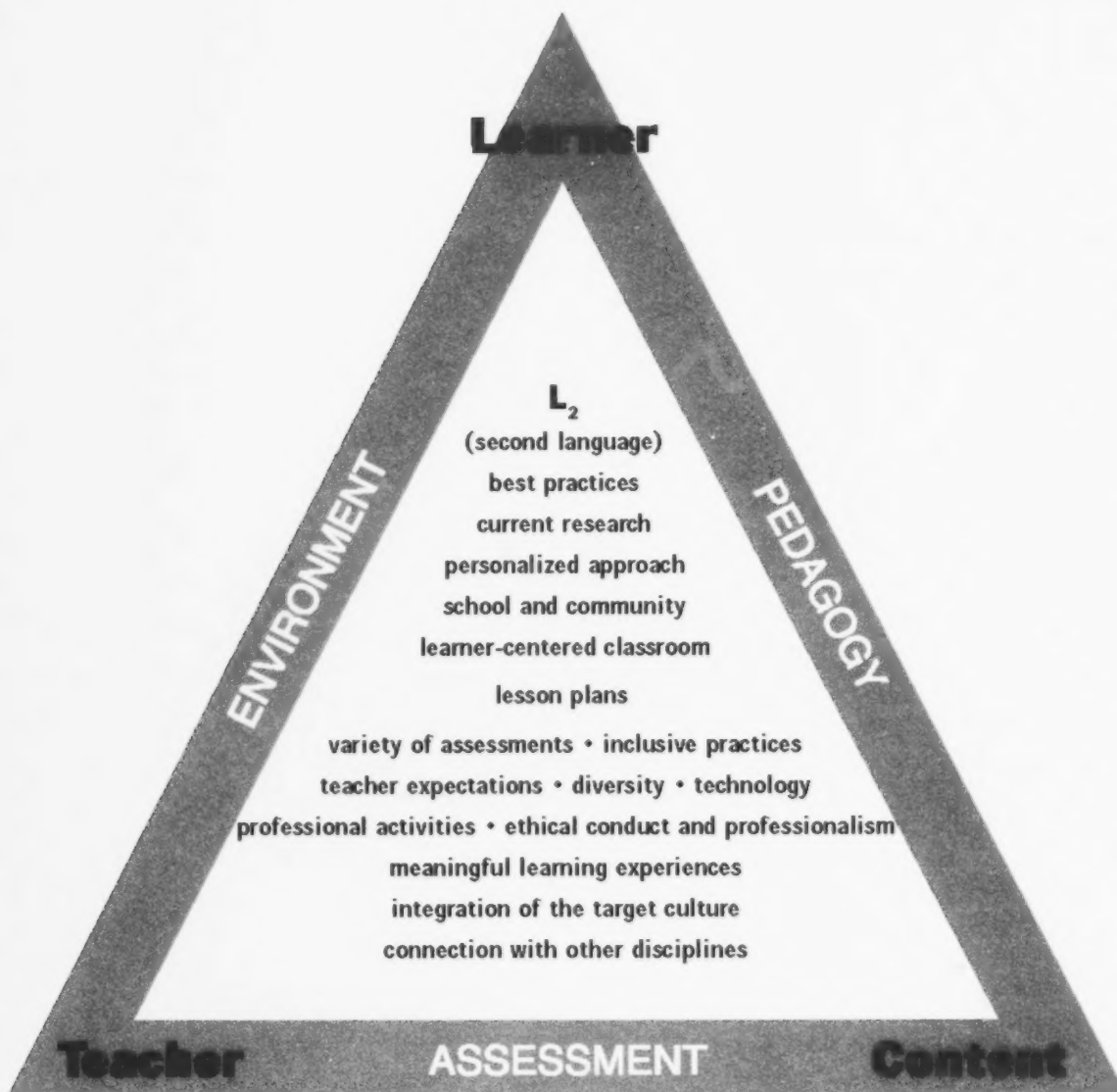
Although cultures exert pressure on their members to conform to a variety of norms, most cultures are not homogeneous. Within each one, there are groups of people who have beliefs, values, and practices that are different from the majority or mainstream culture. These differences may be based on religion, national or ethnic origin, social class, race, or colour. Integral to this course is the provision for students to explore and consider the English-speaking culture within a Canadian and Manitoba context.

The development of intercultural competence can take place in three contexts: in the classroom, as fieldwork, or as an independent experience. In the classroom, activities are planned and structured by the teacher and usually take the form of a rehearsal for interaction in real time. In the classroom, students have the opportunity for discovery and analysis of the culture along with reflection on their learning without the pressure of real time. In other words, they do not have to respond immediately. In fieldwork, activities are still planned and structured, but the interaction is now in real time. Independent experiences are those carried out by students outside of the structure of the course.

EAL for Academic Success: The Critical Elements

As the preceding discussion demonstrates, there are many factors and aspects of teaching and learning that must be considered in developing an effective instructional program and classroom. We can conceptualize this as being the interplay of six elements: learner, teacher, course content, learning environment, pedagogy, and assessment. See the following page for a diagram of the critical elements that are the basis for this course.

EAL for Academic Success: The Critical Elements



Adapted from the *Nebraska K-12 Foreign Language Frameworks*, 1996, as cited in the *New Jersey World Curriculum Framework*, 1999.

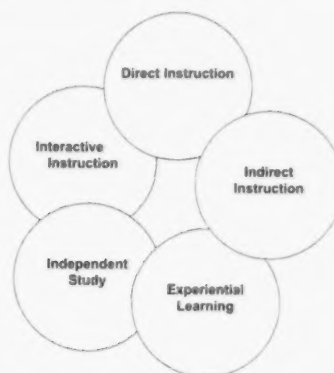
Instructional Strategies in the EAL Classroom

Effective teachers know they are teaching students as well as content. They also know that, in every class, there will be a diversity of students, each of which will bring to the activity and environment different perceptions, prior knowledge, attitudes, and learning styles. It is the teacher's responsibility to make use of a variety of instructional approaches to ensure that the various needs of all types of students are being met.

Decision-making regarding instructional strategies requires teachers to focus on curriculum, the prior experiences and knowledge of students, learner interests, student learning styles, and the developmental levels of the learner. Such decision-making relies on ongoing student assessment that is linked to learning objectives and processes.

The following diagram shows the five instructional strategies that are most effective in developing communicative competence in second/additional language classrooms for students at various stages of second or additional language learning. Note that some strategies are more appropriate for beginning EAL students. In selecting methods to incorporate into a teacher's repertoire or in a specific classroom setting, teachers should consider the developmental level of the students and the appropriateness of the method in the context of the learning situation or student learning outcomes.

The strategies have been grouped according to the categories outlined in *Instructional Approaches: A Framework for Professional Practice* (Saskatchewan Education, available online at www.sasked.gov.sk.ca/docs/policy/approach/index.html). A more detailed description of some of these strategies follows.



Direct Instruction

Direct instruction is highly teacher-directed and is historically one of the strategies most commonly used. It is used for providing information or developing step-by-step skills. This strategy works well for introducing other teaching methods or actively involving students in knowledge construction.

Direct instruction is usually deductive; that is, the rule or generalization is presented and then illustrated with examples. While this strategy may be considered easy to use, effective direct instruction is often more complex than it would first appear.

Indirect Instruction

Indirect instruction is mainly student-centred and seeks a high level of student involvement in observing, investigating, drawing inferences from data, or forming hypotheses. It takes advantage of students' interest and curiosity, often encouraging them to generate alternatives or solve problems. It is flexible, in that it frees students to explore diverse possibilities and reduces the fear associated with the possibility of giving incorrect answers. Indirect instruction also fosters creativity and the development of interpersonal skills and abilities.

Interactive Instruction

Interactive instruction relies heavily on discussion and sharing among participants. Discussion and sharing provide learners with opportunities to "react to the ideas, experience, insights, and knowledge of the teacher or of peer learners and to generate alternative ways of thinking and feeling" (Seaman and Fellenz 119). Students can learn from peers and teachers to develop social skills and abilities, to organize their thoughts, and to develop rational arguments. The interactive instruction strategy allows for a range of groupings and interactive methods.

Experiential Learning

Experiential learning is inductive, learner-centred, and activity-oriented. Personalized reflection about an experience and the formulation of plans to apply learning to other contexts are critical factors in effective experiential learning. The emphasis in experiential learning is on the process of learning, and not on the product. Experiential learning occurs when learners

- participate in an activity and critically look back on the activity to clarify learning and feelings
- draw useful insights from such analysis and put learning to work in new situations

Independent Study

Independent study refers to the range of instructional methods that are purposefully provided to foster the development of individual student initiative, self-reliance, and self-improvement. While independent study may be initiated by the student or teacher, the focus here will be on planned independent study by students under the guidance or supervision of a classroom teacher.

In addition, independent study can include learning in partnership with another individual or as part of a small group. Independent study encourages students to take responsibility for planning and pacing their own learning.

After deciding on appropriate instructional strategies, a teacher must make decisions regarding instructional methods. As is the case with strategies, the distinctions between methods are not always clear-cut, although they are categorized for the purpose of this document. The following checklist illustrates how various methods relate to the five broad categories of strategies. It should be noted that the methods appearing in the checklist are examples only, and are not intended to be inclusive of all instructional methods.

Instructional Methods Checklist

Direct Instruction

- ☐ Compare and Contrast
- ☐ Demonstration
- ☐ Didactic Questions
- ☐ Drill and Practice
- ☐ Guides for Listening, Reading, and Viewing
- ☐ Mini-lecture
- ☐ Read and Retell
- ☐ Structural Exercises

Indirect Instruction

- ☐ Author's Chair
- ☐ Case Studies
- ☐ Cloze Procedure
- ☐ Graphic Organizers
- ☐ Discussions
- ☐ Grammatical Problem Solving
- ☐ Reflective Discussions

Interactive Instruction

- ☐ Brainstorming
- ☐ Categorizing
- ☐ Circle of Knowledge
- ☐ Word Splash
- ☐ Graffiti
- ☐ Co-operative Learning
- ☐ Cultural Presentations
- ☐ Information Gap
- ☐ Dictogloss
- ☐ Interactive Language Tasks
- ☐ Language Experience

Interactive Instruction (continued)

- ☐ Learning Circle
- ☐ Surveys and Interviews
- ☐ Debate
- ☐ Town Hall
- ☐ Problem Solving

Experience Learning

- ☐ Field Trips
- ☐ Focused Imaging
- ☐ Games
- ☐ Role Play

Independent Study

- ☐ Computer-Assisted Instruction
- ☐ Logs and Journals
- ☐ Free Writing
- ☐ Personal Dictionaries
- ☐ Learning Contracts
- ☐ Research Projects

Direct Instruction Methods

Direct instruction methods are highly teacher-centred. They are often used in the following situations:

- ☐ daily, weekly, and monthly review
- ☐ presenting new material
- ☐ conducting guided practice
- ☐ providing feedback and correctives

Description of Instructional Methods

The following pages provide a brief overview of the instructional methods listed in the checklist.

Direct Instruction Methods

Compare and Contrast

This method involves looking for similarities and differences, for example, between an aspect of an English-speaking culture and the students' own culture.

Students

- observe details and develop criteria
- identify similarities
- search and sort out differences based on criteria
- summarize

The four components of compare and contrast, as listed above, can be used in assessment as criteria in the templates for anecdotal records, checklists, and rating scales.

Demonstration

This method refers to teacher activities and talk that show students how to complete a task. Demonstrations apply primarily to skills and processes, and are useful for helping students acquire procedural knowledge. Teachers might, for example, take students step by step through the writing process, or demonstrate a particular learning strategy.

Didactic Questions

These are questions that tend to be convergent (they tend to focus on one topic) and factual. They often begin with "who, what, where, when, and how." The teacher is able to observe the degree of student acquisition of knowledge of content and process through this activity. A written assignment or an oral presentation or interview (live or taped) may be the ongoing student activity used for assessment. The teacher will record student progress using a rating scale, checklist, or anecdotal records.

Drill and Practice

This method refers to the structured, repetitive review of previously learned concepts to a predetermined level of mastery. It tends to focus on skills. Care should be taken to ensure that these exercises are directly related to the context in which the student will use the language being practised, and that they require the student to focus on the meaning as well as on the form.

Guides for Listening, Reading, and Viewing

Students' comprehension of a selection is guided and developed by teacher-prepared questions or graphic organizers. As students gain practice and confidence in using this method, the teacher will monitor or confer with small groups or individuals.

Mini-lecture

The mini-lecture is a one-way type of communication. It is an efficient way of providing a small amount of information in a short period of time. The purpose of a mini-lecture is to impart knowledge about an aspect of culture, for example, or a grammatical structure.

Mini-lectures are effective when they are

- 10–15 minutes in duration, and never longer than 20 minutes
- mixed with group discussion and demonstrations
- accomplished with such visual aids as overhead transparencies and posters

The most appropriate way of assessing understanding is a combination of test items such as essay, short answer, multiple choice, and true/false.

Read and Retell

This all-purpose method involves students retelling a passage in English as they remember it.

The teacher asks the students to read a passage. Students can be working together as a class, in small groups, in pairs, or working alone with the teacher. Then, the teacher asks the students to retell the passage as they remember it, either orally or in writing using English.

Read and retell is effective when it

- provides practice in a range of literacy skills in the target language including listening, speaking, reading, writing, interacting, comparing, matching, selecting, remembering, comprehending, and organizing the information
- provides an index of growth and development in a wide range of literacy learning
- provides opportunities to use the target language

Structural Exercises

Even at the advanced stage of EAL learning, students may benefit from **occasional** structural exercises that focus their attention on the form or structure of the language. Research has shown that students learn better from these kinds of exercises if there is a direct connection with their own productions. Structural exercises can take a variety of forms depending on the structures and vocabulary that need to be practised. Some examples are

- adding words or phrases to a short sentence
- taking words or phrases out of a long sentence
- substituting words or phrases for other ones in a sentence
- moving words or phrases around in a sentence
- changing elements of a sentence

Procedure: The basic procedure is similar for all types of exercises.

1. Begin with sentences taken from texts written by the students. Choose structures that are giving problems to a number of students.
2. Write the sentences on strips of paper and cut them up. When doing this for the first time with students, write on large strips so that the whole class can see what you are doing. Later, when students are able to do these exercises on their own or in small groups, the sentences can be written on smaller strips of paper. Have some blank strips of paper ready for new words.
3. Ask students for suggestions depending on the type of exercise you have chosen (add, take away, substitute, move, change, etc.). Analyze the new sentence that is formed, by asking questions such as, "Does this new sentence make sense?", "How has the meaning changed?", "Do we have to make any other changes so that the sentence is still grammatically correct?"
4. Repeat these steps a number of times as a whole group, then have students do the work individually or in small groups.
5. Students should have opportunities to use the same structures and vocabulary in their own speech or writing as soon as possible after doing the exercises.

Tips: The analysis and discussion that follow each change in the sentence is particularly important to make students aware of changes in the meaning. Exercises where students make changes to sentences without having to reflect on the meaning are not effective in teaching and reinforcing structures.

Language Development: Specific exercises can be devised to work on the most common errors that students make. For example, take sentences from the rough drafts of student writings, do appropriate structural exercises, and then have students correct their own productions. The repetition involved in doing the exercises helps to make common structures automatic for second/additional language students.

Indirect Instruction Methods

Indirect instructional methods are student-centred. These methods are very effective when the instructional goals include

- thinking outcomes
- attitudes, values, or interpersonal outcomes
- process as well as product
- personalized understanding and long-term retention of concepts or generalizations
- lifelong learning capability

Author's Chair

During this procedure, students read aloud their written drafts or compositions to others. Listeners provide positive and constructive comments to the "author" to assist future writing efforts. Writing is usually shared with the entire class, but occasionally authors could read to small groups. One particular chair or area of the classroom may be designated for this activity.

Case Studies

Case studies are usually descriptions of real or imaginary situations that are either unresolved or have a controversial theme. They are used for group discussion and for the generation of ideas and solutions. Case studies are a useful strategy for looking at misunderstandings between people of different cultural groups. They can be used as individual assignments or as small group assignments. Discussion of what has been learned is a valuable follow-up to a case study approach.

Cloze Procedure

The cloze procedure is an open-ended method in which a selected word or phrase is eliminated from a written or oral sentence or paragraph.

The teacher eliminates a word or phrase from the sentence. Students complete the sentence with a word that "makes sense." The teacher may select random words or a specific part of speech. This can be expanded to the more difficult task of finding a word that makes sense when only the initial letter of the word is provided.

Cloze is effective when it

- provides opportunities for creativity
- develops the use of precise vocabulary
- focuses on the use of precise and correct communication
- increases comprehension skills
- provides opportunities to use English

Procedure: The cloze procedure is most often used with written texts and is particularly effective if done with groups of students rather than individually.

1. Choose a written text (or write a text) appropriate to the students' level. Leave the first sentence untouched, then delete a number of words from the rest of the text, leaving the last sentence untouched as well. There are a number of ways of deciding which words to delete:
 - delete every seventh word (fewer for beginner level students, more for more advanced students)
 - delete key words related to the topic of the sentence
 - delete words that have a particular grammatical function (such as all the adjectives, or all the pronouns)

Replace the words with blanks of equal length so that there is no clue as to the length of the words that have been deleted.

2. Ask the students to read the text and try to fill in the missing words. They can use any clues they can find in the text, or any knowledge they have of the topic or the language to try to discover what the missing words might be. The text must make sense when it is complete.
3. Ask the students to explain why they think a particular word fits the blank in the sentence. If there is more than one suggestion, the students can discuss their reasons for each choice and decide which is the best. The sharing of ideas and interpretation strategies is an important aspect of this instructional method.

Tips: If the students have never done this kind of exercise before, do several together with the whole class before having them work independently in small groups. Model the process of looking for clues in the text by "thinking aloud" as you go through the text with the students.

The object of the activity is not necessarily to find the original word. If the students are able to fill the blank with a word that makes sense and fits the sentence grammatically, it does not need to be the word originally in the text.

Make a list of the strategies used to fill in the missing words and post it in the classroom. Add to the list as new strategies are introduced.

Applications: The cloze procedure can be used on the opening paragraphs of a longer text that the students will be reading to help them focus on key words for the reading and to encourage them to use their background knowledge of the topic to improve comprehension.

This procedure can also be used orally to encourage students to predict what is to come. While reading aloud, stop and have students listen carefully to predict the next word or phrase in the sentence.

The cloze procedure can also be employed to assess the students' use of a variety of interpretation strategies and their awareness of particular language patterns and structures.

Language Development: The cloze technique helps students become aware of interpretation strategies they are using and learn new strategies by listening to the explanations of their fellow classmates. It helps them learn to use the context and their prior knowledge to make intelligent guesses about unknown words they may encounter in their reading.

Graphic Organizers

Graphic organizers are visual representations of texts or groups of related ideas, words, or thoughts. They can take a variety of forms, some of which have a specific name, depending on what they are representing and how they will be used. Some examples are frames, mind maps, webs, concept or semantic maps, story maps, Venn diagrams, and flow charts.

The teacher provides a specific format for learning, recalling, and organizing linguistic or cultural concepts learned through English.

Graphic organizers are beneficial when they are used to

- help students visualize abstract concepts
- help learners organize ideas
- provide a visual format for study

Consequence Diagram/Decision Trees—A graphic organizer method in which students use diagrams or decision trees to illustrate real or possible outcomes of different target cultural actions or situations.

Students visually depict outcomes for a given problem by charting various decisions and their possible consequences.

Consequence diagrams/decision trees are effective tools to

- help in transferring English-language learning to application
- aid in predicting with accuracy
- develop the ability to identify the causes and effects of decisions
- aid in clarifying positive and negative statements

Webbing—A graphic organizer method that provides a visual picture of how target language words or phrases connect to a content-based or cultural topic.

The teacher lists a topic and builds a web-like structure of target language words or phrases that students call out as being connected to a topic. Students can also use this method individually in planning, writing, or in studying for a test.

Webbing is an effective tool to

- provide opportunities for the visual learner to “recall” the connections for later use
- help students use and share their prior linguistic knowledge
- help students identify patterns of information

Concept Mapping—A graphic organizer method that shows the relationships among concepts. Usually the concepts are circled and the relationships are shown by connecting lines with short explanations in English or graphical depictions of the objects or concepts.

The teacher selects a main idea. Using English, the teacher and students then identify a set of concepts associated with a main idea. Concepts are ranked in related groups from most general to most specific. Related concepts are connected and the links labeled with words, pictures, or short phrases.

Concept mapping is an effective tool to

- help students visualize how ideas are connected, and understand linguistic relationships and how knowledge is organized
- improve oral communication, comprehension, and problem-solving skills

K-W-L (Know-Want to Know-Learned)—An introductory method that provides a structure for recalling what students know regarding a target language or cultural topic, noting what students want to know, and finally listing what has been learned and is yet to be learned.

Before engaging in an activity, reading a chapter, listening to a lecture, or watching a film or presentation, the teacher lists on the board under the heading *What We Know* all the information students know or think they know about a topic. Then, the teacher lists all the information the students want to know about a topic under *What We Want to Know*.

While engaging in the planned activity, the students research and read about the topic, keeping in mind the information they had listed under *What We Want to Know*.

After completing the activity, the students confirm the accuracy of what was listed and identify what they learned, contrasting it with what they wanted to know. The teacher lists what the students learned under *What We Learned*.

K-W-L strategies are effective tools to

- build on prior knowledge
- develop predicting skills
- provide a structure for learning
- develop research skills
- develop communication skills in co-operative groups
- strengthen teamwork skills
- provide opportunities to use English reading, writing, listening, speaking, and viewing

Teachers may want to adapt K-W-L charts by adding a fourth column—"Where Do We Find It?"—referring to the information required. Students strengthen their "resourcing" skills that are critical to academic tasks.

Learning Log—A method to develop structured writing in English. An excellent follow-up to K-W-L.

During different stages of the language learning process, students respond in written form under three columns:

- What I Think
- What I Learned
- How My Thinking Has Changed

Learning logs are effective tools to

- bridge the gap between prior knowledge and new content
- provide a structure for translating target language concepts into written form

Venn Diagram—A graphic organizer method, derived from mathematics, for creating a visual analysis of information representing the similarities and differences among, for example, English language concepts or culture objects, events, animals, and people.

Using two overlapping circles, students list unique characteristics of two items or concepts (one in the left part of circle and one in the right); in the middle they list shared characteristics. More than two circles can be used for a more complex process.

Venn diagrams are effective tools to

- help students organize ideas and course concepts
- help students develop a plan for writing
- allow students to focus on the similarities and differences within and among languages and cultures
- develop the ability to draw conclusions and synthesize
- stimulate higher cognitive thinking skills

Flowchart—A graphic organizer method used to depict a sequence of events, actions, roles, or decisions.

Students structure a sequential flow of events, actions, roles, or decisions graphically on paper.

Flowcharts are effective tools to

- foster logical and sequential thinking
- focus on cultural connections
- develop the ability to identify details and specific points
- develop organizational skills
- aid in planning
- provide an outline for writing in the target language

T-Chart

Purpose: clarify central concepts or ideas; to collect specific examples for an idea or behaviour

Thinking Skills: specifying, categorizing

How to use: In the Looks Like column, list all the behaviours or observable characteristics related to a topic; in the Sounds Like column, list all the sounds or audible characteristics, including possible verbal messages.

Procedure: When introducing graphic organizers for the first time, model their use in a simple situation, going step by step through the process, explaining what you are doing at each step and why. Use the same graphic organizer on several occasions, getting more and more student input each time. As students gain more understanding and skill, they can be given more opportunity for discussion about how different elements should be represented and what they should be linked to. Once students are accustomed to using a particular type of graphic organizer, they can begin to use it independently in small groups. The form of familiar graphic organizers can be posted in the classroom as a resource for students as they work.

Second/additional language learners may need some preparation before working on a graphic organizer to build their vocabulary on the topic. They might watch a short film, read a text (or listen to someone else read), or brainstorm ideas and categorize them. Throughout the preparatory activity and the development of the graphic organizer, the teacher can supply any vocabulary that the students are lacking.

Tips: Use different colours and shapes to add more meaning to the graphic organizer.

Prepare labels of the words associated with a theme or topic and have students organize them, showing the connections they think are important. When they are happy with their arrangement, they can glue the labels on a large sheet of paper or attach them to a bulletin board with tacks or staples.

Applications: People construct knowledge based on what they already know. Graphic organizers are used to organize and represent knowledge, and help the learner construct new meanings in a subject. The goal of this method is not to find the "right answer" or the "correct" graphic organizer. It is to improve understanding of texts or to explore how ideas or words relate to each other.

Understanding can be expanded by discussing different visual representations and seeing how others' interpretation is different from one's own.

Different kinds of graphic organizers can be used to represent expository texts. The most common structures for these kinds of texts are

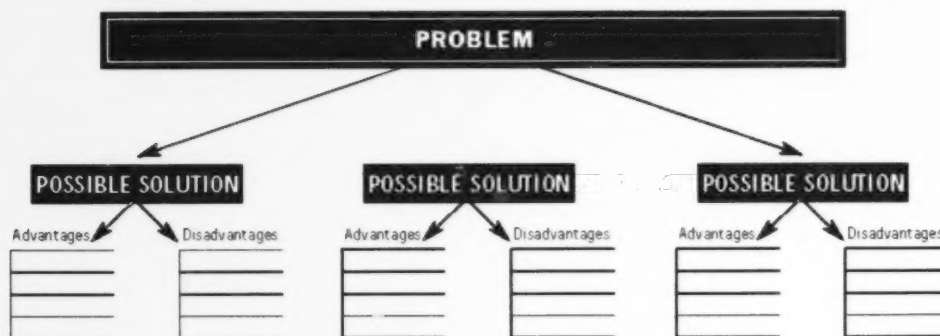
- description
- enumeration or listing
- comparison and contrast
- cause and effect
- problem and solution

At the same time as students are made aware of how these different kinds of texts are organized, they can learn the key words and phrases used to structure the texts. A Venn diagram is an example of a graphic organizer for comparison and contrast. Differences are recorded in the outer parts of the circles, similarities in the area where they overlap.

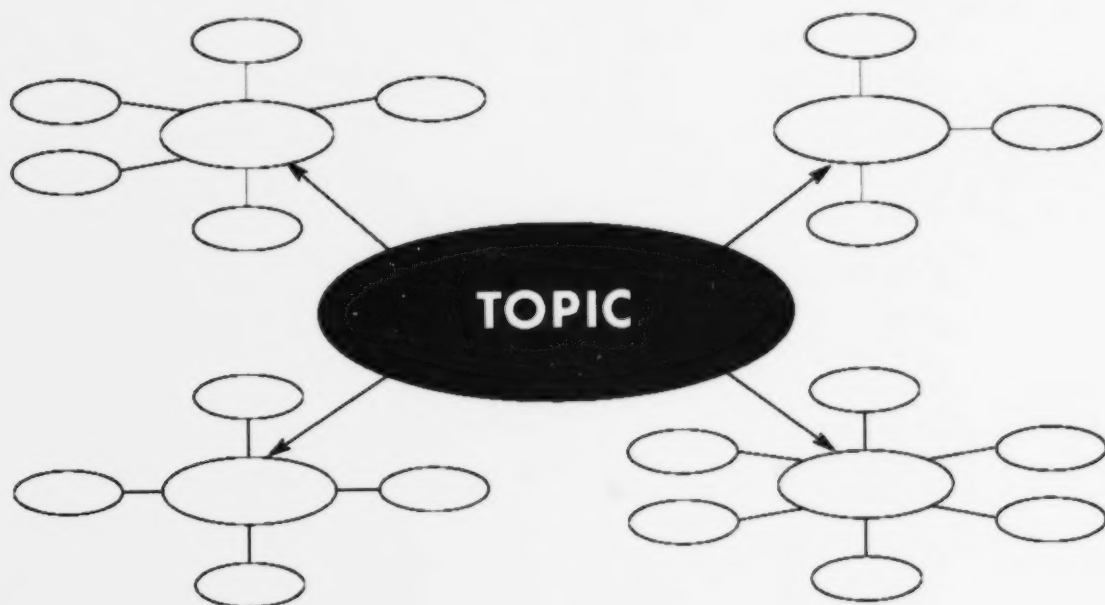
Language Development: Graphic organizers are used for a variety of purposes in the second/additional language classroom. They can help students

- organize information they have heard, viewed, or read
- remember vocabulary by making connections with words or phrases they already know
- plan an oral or a written text
- better understand the way texts of different types are structured and organized
- prepare for a listening, reading, or viewing activity by anticipating what they might hear or see
- learn new concepts by relating them to what they already know
- represent what they know about a topic

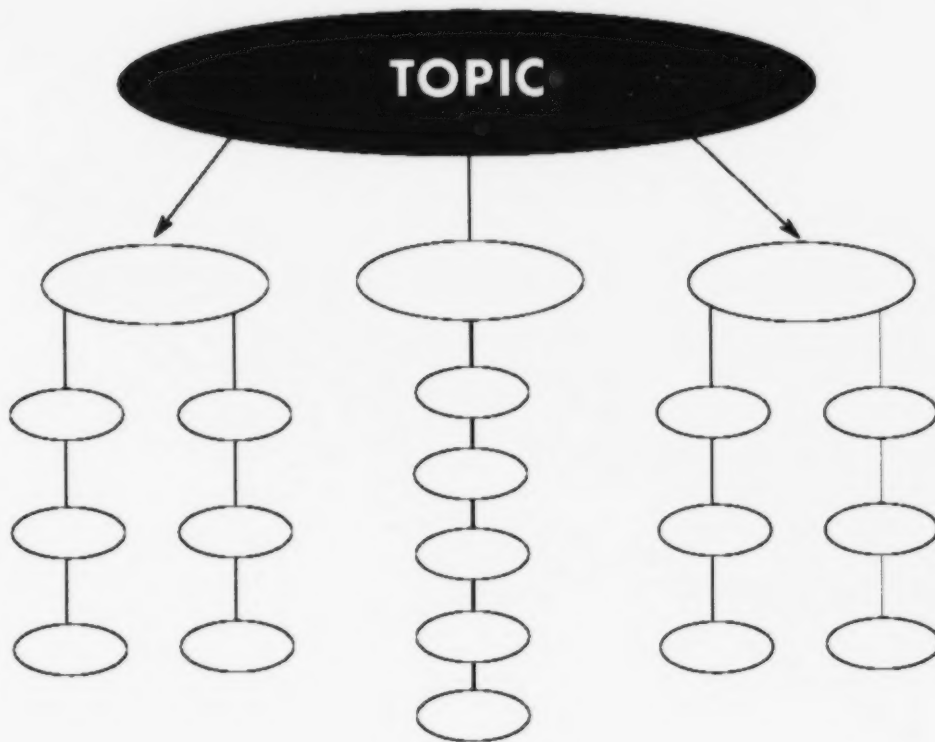
Example of a Diagram/Decision Tree for Problem-Solving



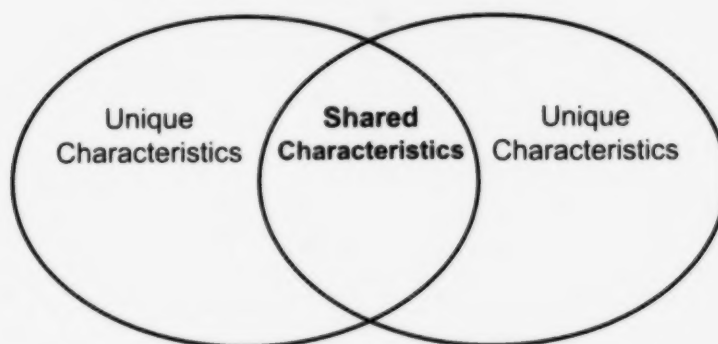
Example of a Web



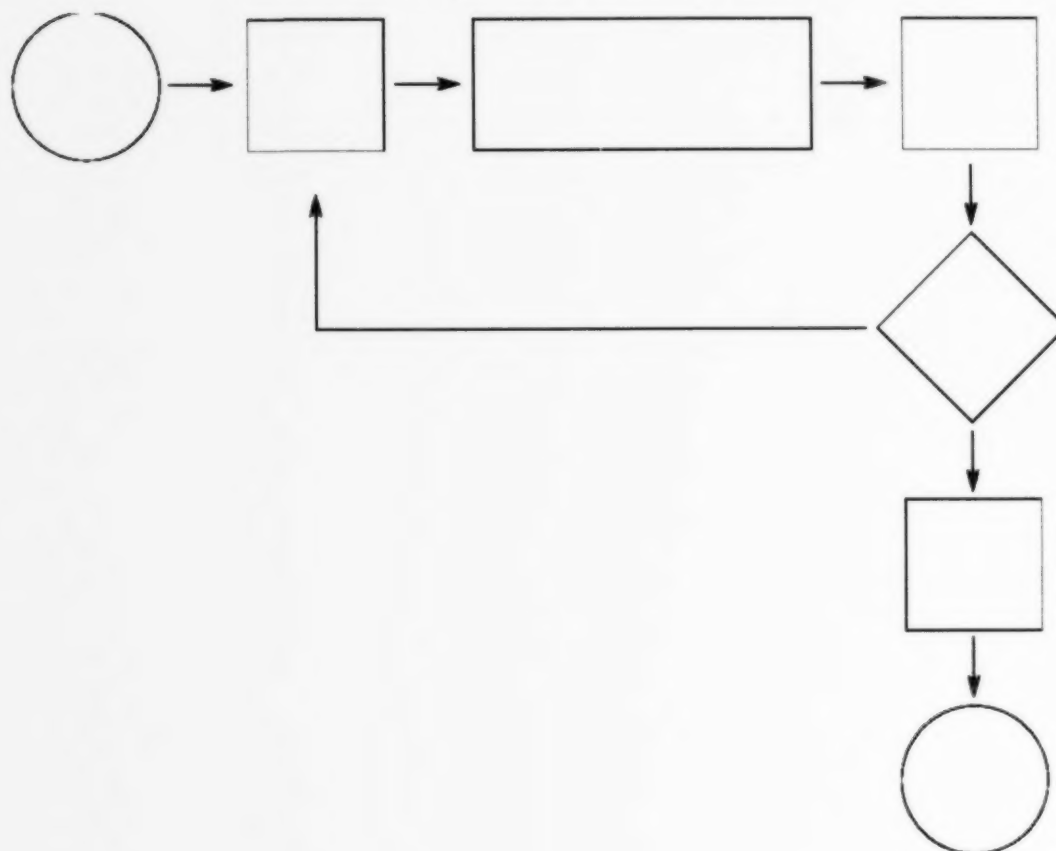
Example of a Concept Map



Example of a Venn Diagram



Example of a Flowchart



Example of a T-Chart

Name(s) _____ Topic: _____	
T-CHART	
Title: _____	
<i>Looks like:</i>	<i>Sounds like:</i>

Discussions

A discussion is an oral exploration of a topic, object, concept, or experience. All learners need frequent opportunities to generate and share their questions and ideas in small and whole class settings. Teachers who encourage and accept students' questions and comments without judgment, and clarify understandings by paraphrasing difficult terms, motivate students' interest in using the English language and the exchange of ideas.

The teacher or student initiates the discussion by asking a question that requires students to reflect upon and interpret films, experiences, stories, or illustrations. As students question and recreate information and events in a film or story, they clarify their thoughts and feelings. The questions posed should encourage students to relate text content to life experiences and to other text.

Interpretations will vary, but such variances demonstrate that differences of opinion are valuable.

Grammatical Problem Solving

Definition

A method often used to teach grammar is to present students with a rule, provide them with examples, and then have them do exercises to determine if they understand the rule and to help them learn through repetitive drill. Grammatical problem solving involves having students use deductive reasoning to discover rules and understand grammatical concepts on their own. Instead of working from the rule to the examples, students work from the examples to the rule.

Procedure

1. Provide students with a number of examples that illustrate a particular grammar rule that you want them to learn. Ask them to look at the examples and try to determine what the rule might be. It is useful for students to work in pairs or small groups, and discuss their reasoning.
2. If their first attempt at deducing the rule is not successful, provide more examples that are designed to lead them in the right direction. It is also helpful to provide contrasting examples to guide the thinking of students. Continue in this way until they have discovered what the rule is.
3. Once students have figured out the rule, ask them to provide their own examples to check for understanding.

Tips: It is not important that students use the proper grammatical terminology as long as they are able to explain what they mean. Often if students formulate the rule in their own words, they will be able to remember it better.

Start with a fairly simple rule if students are not used to this method. It may take some practice for them to be able to formulate rules of their own.

Applications: This method can be used to teach almost any language rule.

Language Development: Having students discover or deduce the rule themselves usually leads to a better understanding. It also develops their ability to learn language independently. Being able to deduce rules from multiple examples is an effective language learning strategy.

Reflective Discussions

Reflective discussions encourage students to think and talk about what they have observed, heard, or read.

Reflective Thinking—A method in which students reflect on what was learned after a lesson is finished, either orally or in written form.

Two possible approaches to reflective thinking are (1) students can write in a journal in their own words: the concept learned, comments on the learning process, questions, and interest in further exploration; (2) students can answer an oral questionnaire addressing such questions as "Why did you study this? Can you relate it to real life?"

Reflective thinking strategy is an effective tool to

- help students assimilate what they have learned
- help students connect concepts to make ideas more meaningful

- foster additional opportunities to use the target language in a meaningful setting

Interactive Instruction Methods

Interactive instruction methods employ groups of learners. Before the group members get to work, it is important for them to be aware of what they are to accomplish, how much time they have, and what the recording or reporting procedures are.

Brainstorming

Brainstorming is a strategy for eliciting ideas from a group and communicating them in English in oral or written form.

Students contribute ideas related to a topic. All contributions are accepted without initial comment. After the list of ideas is finalized, students categorize, prioritize, and defend selections.

Brainstorming is an effective tool to

- reveal background information and knowledge of a topic
- disclose misconceptions
- help students relate existing knowledge to content
- strengthen English communication skills
- stimulate creative thinking

Brainstorming is a technique for producing the greatest possible number of ideas around a question or a topic. Originally developed to stimulate creativity, this technique is now commonly used in classrooms to encourage students to explore what they know or want to know about a topic.

Brainstorming is most effective when

- all statements are accepted
- quantity rather than quality is emphasized
- no criticism is given, anything goes (no matter how outrageous or far-fetched)
- no discussion or judgments except for clarification purposes
- people can build on other ideas
- a fixed time is allocated

Once ideas have been generated, they can be combined or ordered.

Teachers may decide to assess brainstorming when it is used in the context of co-operative learning groups. Anecdotal records may be the preferred method of recording data.

Brainstorming is particularly useful in the following situations:

- to explore possible solutions to a problem
- to get ideas for a writing project
- to explore what students know about a topic
- to explore questions or topics for further research

This technique may not seem well suited to the second/additional language classroom at first, since students will sometimes have difficulty expressing their ideas in the new language. It is, however, very useful for developing vocabulary and structures at the beginning of a unit. Here are a few ideas to make it more successful in second/additional language classrooms:

- Before using brainstorming on a topic that is unfamiliar to students, have them read a text, view a film, or do an activity that will introduce them to some of the vocabulary and expressions they will need.
- Encourage students to use gestures, illustrations, and paraphrasing if they cannot think of the exact word they need.
- If students use English to express their idea, give them the equivalent word or expression in the second/additional language and write it down with the other ideas, adding a drawing or brief explanation so that they can remember what it means.
- If you cannot think of the word, do not be afraid to admit it and use a dictionary to find the correct term or spelling.

Categorizing

Categorizing involves grouping objects or ideas according to criteria that describe common features or the relationships among all members of that group.

This procedure enables students to see patterns and connections; it develops students' abilities to manage or organize information. Categorizing is often used to organize the information produced during a brainstorming activity.

Assessment might include monitoring students' ability to understand relationships among items, categorize items using more than one criteria or category, and categorize items independently.

Circle of Knowledge

This method involves each student in thinking and discussing a topic with peers before sharing ideas with a large group. Students take turns going around the circle. The circle of knowledge method is used in the same manner as reflective discussion.

Word Splashes

A word splash is a collection of words about a topic. These words are displayed in a random arrangement in a variety of fonts, shapes, and colours. A word splash is a strategy that can be used

- a) as an activation strategy to help students
 - focus on a new topic
 - activate and share prior knowledge
 - develop prediction skills
 - develop inference skills
- b) as a strategy to summarize what has been learned

Steps in using the word splash as a pre-reading, pre-viewing, or listening activity:

1. The teacher selects 15-20 terms from the material to be viewed, read, or listened to and writes them on chart paper, the board, or an overhead. The terms should not be new to the students, as they must use them to predict the content of an article, video, or story. The terms should be a combination of verbs, adjectives, and nouns.
2. Referring to the terms, students write point-form notes for each, trying to predict what each has to do with what they will be viewing, hearing, or reading. Together, these terms should help students predict the topic of the lesson.
3. When students have completed their lists they share them with their classmates, pointing out one detail they are sure is correct and one they are unsure about.
4. Finally, the teacher distributes the reading to be read individually, in pairs, or in groups. If the activity is a listening activity, the teacher reads the piece aloud. If it is a video clip or movie, the students view the piece. As the students proceed with the activity, they should stop periodically to check their predictions.

To use as culminating activity:

1. Students decide what terms are most important in describing the information they have learned in the activity they have completed. They should choose a variety of nouns, verbs, and adjectives.
2. Individually or in groups, students create a word splash to summarize the important ideas they have learned.
3. Students' word splashes can be creative in terms of colours, shapes, fonts, etc., that reflect the meaning or importance of the term or idea about which they are writing.
4. The word splashes are shared in pairs or as a class, with the other students commenting on why the student presenting his or her word splash may have chosen the terms or ideas he or she has chosen. They may also comment on the method of presenting the terms.

Graffiti

Graffiti is a type of co-operative brainstorming that allows students to indicate their prior knowledge, opinions, and creative thinking on a topic. It allows students to get out of their seats, move around, and interact. Using poster-size papers and coloured markers, students write or draw their ideas about a topic in graffiti form. When the first round of ideas is complete, students write one or two comments or questions in response to the first ones. After students have written all their ideas, the teacher uses the posters as the basis of discussion. Graffiti posters are a good method for introducing or reviewing a topic.

Co-operative Learning

Co-operative learning is a method in which students work together in small groups to achieve a common goal, while communicating in English. Many learning situations and tasks in North American classrooms require extensive co-operative work. EAL students often need to learn and use effective group process

skills and the **conversational gambits** that facilitate interaction. Co-operative learning involves more than simply putting students into work or study groups. Teachers promote individual responsibility and positive group interdependence by making sure that each group member is responsible for a given task. Co-operative learning can be enhanced when group members have diverse abilities and backgrounds.

After organizing students into groups, the teacher thoroughly explains a task to be accomplished within a timeframe. The teacher facilitates the selection of individual roles within the group and monitors the groups, intervening only when necessary, to support students working together successfully and accomplishing the task.

Co-operative learning is an effective tool to

- foster interdependence and pursuit of mutual goals and rewards
- develop leadership skills
- increase the opportunities to use English in authentic, communicative situations
- increase participation of shy students
- produce higher levels of student achievement, thus increasing self-esteem
- foster respect for diverse abilities and perspectives

Co-operative learning embraces a number of interactive instruction methods that involve students working in small groups to complete a task or project. The task is structured in such a way that involvement of each group member contributes to completion of the task. Success is based on the performance of the group rather than on the performance of individual group members.

Co-operative learning stresses interdependence and promotes co-operation rather than competition. Establishing and maintaining co-operative group norms develops the concept of a community of learners. Co-operative learning activities are carefully structured to include five basic elements:

Positive Interdependence: Each member of the group is concerned about the performance of other group members as well as their own. All individuals must succeed for the group to succeed.

Individual Accountability: Each member of the group is responsible for the work of the group.

Face-to-face Interaction: Students work in environments that facilitate communication and co-operation.

Social Skills: Students are directly taught the human interaction skills that enable groups to function effectively.

Group Processing: Group members have opportunities to receive feedback on how their group has been functioning and make plans to improve.

Co-operative learning activities can be structured in many ways (see applications below), but these five elements should be present in some form or other.

Procedure

1. **Positive interdependence** can be structured into group activities in a number of ways:
 - Students have a common goal (e.g., every member must contribute to making a single product or all members of the group must improve their score on a quiz).
 - Students receive the same reward for completing the task (e.g., their group project is displayed in the school or each group member receives bonus points to add to their individual score).
 - Students share one set of materials or information (e.g., the group gets one large sheet of paper, one set of coloured pencils, one ruler, and one eraser to produce a map).
 - Each member of the group is assigned a complementary and interconnected role (e.g., in a group of two, one person cuts and the other glues; or in a group of four, students share the roles of reader, writer, timekeeper, and noise monitor). Direct teaching of different roles within the group may be necessary. Rotate the roles so that all students have the opportunity to develop their skills in different roles.
 - Each member of the group is responsible for carrying out one step of an overall task that needs to be done in step-by-step order (e.g., when preparing a dish, one group member is responsible for gathering ingredients, another for measuring, another for mixing; or when producing the final copy of a letter, one student checks the spelling, another checks the grammar, another checks the page layout, and another checks for capitalization and punctuation).
 - Students work together against an outside force or constraint (e.g., team members try to beat their previous team score on a quiz or they try to find the most words related to food in a set period of time).
 - Members of the group choose a group name, motto, logo, flag, song, or chant to help establish a feeling of identification with the group.
2. **Individual accountability** is created when any member of the group may be called upon to present the work of the group, defend a decision taken by the group, or answer questions about the project the group has been working on.
3. **Face-to-face interaction** is facilitated when the conditions of work allow the students to work together easily. They can, for example, be grouped around a small table if they need a work surface, or on chairs in a circle if they are just talking. Sometimes pulling desks together means that students are too far apart to talk in soft voices and still be heard by each other.
4. **Learning social skills** is essential if co-operative learning activities are to work well. There are basically two kinds of co-operative skills, those which students use to complete the task (e.g., asking questions, listening actively, staying on task), and those they use to build and maintain the working relationship of the group (e.g., disagreeing in an agreeable way, encouraging others, keeping things calm). Students need to be taught specific skills before they begin their group activity:

- Decide which skills to work on. Concentrate on one or two at a time, depending on the age of the students and their previous experience in co-operative groups.
 - Help students understand why they are learning the skill, what the skill is (by modelling it, for example), how they can practise it, how well they use the skill, and how they can improve.
 - Students learning a new language, in particular, need to be taught specific vocabulary and structures for working in groups. For this reason, some of the specific learning outcomes deal with language functions involved in managing group actions.
 - Students need a variety of opportunities to practise the skill. This encourages them to transfer the skill to new situations.
 - In addition to providing feedback yourself, ensure that students evaluate their use of the skill both individually and as a group.
 - Assessment of the social skill should be part of the overall assessment of the activity.
 - Monitoring the groups as they work will show which co-operative skills are lacking and might become the focus in future lessons.
5. **Group processing** usually takes place at the end of the activity. Students discuss how well their group is functioning and how they may improve the group's effectiveness. This self-assessment may be done individually (e.g., "How did I contribute to the effectiveness of the group?") as well as in the group, and then shared with the rest of the class. Alternatively, one of the roles assigned in the group can be to monitor the use of a specific skill and report back to the group.

The kinds of roles assigned to group members depend on the task they are doing and on the skills they have already developed. Individual role cards, outlining the specific behaviours of each role, may be prepared as references for students while working in groups. Some examples of general roles are facilitator, recorder, encourager, observer, and summarizer. Some examples of roles that might be needed for specific tasks are materials handler, timekeeper, reader, and summarizer.

Tips: If students have little experience working in co-operative groups, start small with groups of two or three students. As they gain more experience and skill, they will be able to handle larger groups. The size of the group will also depend on the nature of the task.

When introducing co-operative learning, begin with a clear, concise task, simple roles, and basic social skills like talking with quiet voices.

It is usually better to group students with different levels of ability, different aptitudes, or different backgrounds. Each student's strong points will be different and each will be able to make a contribution to the group as well as learn from the others.

Students can stay in the same group for varying amounts of time, sometimes for only a few minutes, sometimes for a whole unit if they are working together on a particular task.

The teacher's role while groups are working is to observe student progress, record observations to provide feedback, and to intervene if necessary. When intervening, try to find ways to turn the problem back to the group members for a solution.

Students need time, practise, and explicit instruction to become good at working together co-operatively. Do not expect students to develop interpersonal skills automatically.

Applications

1. Informal Groups

Informal groups are usually small (two or three students) and short-term (a single activity or class). Groups can be formed very quickly by asking students to turn to their neighbour and do something together for a few minutes. Some examples of what students can do in informal groups are

- guided exercises such as practising dialogues and cloze activities
- brainstorming or coming up with lists of words, ideas, and so on
- expressing a personal opinion on a film, a song, a current event
- giving a brief report on strategies they have been trying, Internet sites they have visited, and so on

2. Home Groups

Home groups are often small as well, but are usually maintained for a long period of time, often throughout the whole course. It is important that members of a home group feel at ease with each other since they will be working together over an extended period of time. Students can be asked to name three or four other students they would like to work with and these suggestions can be used to constitute the home groups.

A home group provides ongoing support, both socially and academically, for every member of the group. Learning a new language can be stressful for some students, but they will learn better if they are relaxed and confident.

Home groups can provide support to students in a number of ways:

- checking homework
- correcting notes
- studying for exams
- discussing strategies
- exchanging information about opportunities for using the language outside the classroom
- discussing problems

3. Jigsaw

The jigsaw method is a way of organizing co-operative learning groups to share the workload on larger projects. It involves several steps and two different kinds of groups.

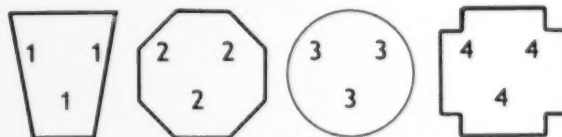
- The students start in their home group or base group. The teacher explains how the project will be organized, outlines what the students' responsibilities are, teaches the social skills that will be worked on throughout the project, discusses assessment, and so on. Within the home groups, each student accepts to work on a particular aspect of the project, to become the "expert" on that part of the project for their group.

1	2
3	4

1	2
3	4

1	2
3	4

- Students from each home group who will be the "expert" for their group on the same topic come together to form expert groups. In their expert groups, they work on the particular aspect of the project they are responsible for, and decide how they will present this or teach it to the other members of their home group.



- Once students have finished the work in their expert groups, they return to their home groups where they use what they have learned in their project, teach it to the others in the group, and remain the "expert" for their group on this particular topic.
- The jigsaw technique is particularly useful for some of the tasks that students will be doing in a task-based language learning class.

Language Development: The language needed to work effectively in small groups can become an important component of a second/additional language class, provided the time is taken to explicitly teach the vocabulary and structures necessary.

It is important to make clear to students that communicating in English is an expectation of their work in co-operative groups. Making it part of the assessment, assigning a language monitor as one of the roles, and teaching ways of helping each other are different ways of doing this.

Information Gap

In an information gap activity, each person has certain information that must be shared with others in order to solve a problem, gather information, or make decisions.

Questions asked in second/additional language classes are often "display" questions. In other words, the person asking the question already knows the answer and is, in effect, simply prompting his or her partner to demonstrate that they know the vocabulary in question. No real communication takes place. Information gap activities involve a real exchange of information, although the situation might be an artificial one.

Information gap activities are often done in pairs, although they can be teacher-led or involve groups of students.

Procedure

Information gap activities can be highly structured or fairly open-ended. In either case, they are most often used for reinforcement of previously learned vocabulary and structures.

- Explain the activity to the students. Make sure they understand that they cannot show the information to their partner. They must communicate verbally.
- If necessary, review the vocabulary and structures that will be needed to complete the activity.
- Once students have completed the activity, they can assess the accuracy of their communication by comparing the information they have.

Tips: When preparing the information gap activity, try to make the situation as realistic as possible so that the questions asked and the answers given are the same as or similar to what might happen in real-life situations.

Make sure that the students have a purpose for exchanging information (e.g., a task to complete, a puzzle to solve, or a decision to make).

The first time you involve students in information gap activities, demonstrate in front of the whole class so that students understand that they cannot just show their information to their partner.

Applications: Information gap activities can be organized in many different ways.

Communication gap activities can also involve groups of students:

- Students are asked to write a short text (e.g., a description of a family member). After they have gone through the usual process of drafting, writing, and editing, and the teacher has corrected the text, they rewrite the text with some information left out (e.g., Francisco has blue eyes and _____ hair). Other students read the altered text and ask questions to fill in the missing information.
- Jigsaw activities are also information gap activities. For example, each student in the home group is given part of a text on the topic of the unit. The information in the text will usually be needed to complete a specific task. Together they have the whole text, but no single student has all the information. Students regroup with other students from different home groups who have the same part of the text, and they work together to understand all the information. They then return to their home group to share the information with the others and complete the task together.

Teacher-led information gap activities can involve the teacher asking questions for which he or she does not already know the answer.

Language Development: Information gap activities provide students with opportunities to practise vocabulary and grammar structures in more interesting ways. Motivation is usually high because forms and functions are used for a real, although contrived, exchange of information.

Dictogloss Strategy

In this co-operative listening activity, students reconstruct a text that has been read aloud in class. The activity can introduce students to key words at the beginning of a topic, help focus their attention on meaning while listening, and help them to develop listening strategies. As the chosen short text (print, audio, or video) is read or played, students work in small groups to write down key words, and then attempt to recreate the text. Groups work to edit and proofread their texts before presenting them to the class for comparison with the original, justifying any differences in versions.

Interactive Language Tasks

In interactive language tasks, at least two students work together to accomplish a meaningful English language activity.

The teacher organizes the class into small groups or pairs that then perform a specific task using language. Examples of tasks include finding differences and similarities, identifying objects or persons, arranging things, giving and following directions, interviewing, surveying, choosing, explaining, and solving problems.

Interactive language tasks are effective tools to

- foster interdependence and pursuit of mutual goals
- develop communication skills
- strengthen listening skills
- provide opportunities to use the target language

Surveys and Interviews

Surveys and interviews are methods for gathering information and reporting.

Surveys and interviews are effective tools to

- foster connections between ideas
- develop the ability to interpret answers
- develop organizational and planning skills
- develop problem-solving skills
- provide opportunities to use the target language

In surveys, students collect information from a sample of people to determine the frequency of particular responses. They then analyze the data and prepare a report on the results. Using surveys as an instructional method can also develop students' numeracy as well as their creative and critical thinking.

In interviews, students prepare a set of questions and a format for the interview. After conducting the interview, students present their findings to the class.

Procedure: The first time students do a survey, it is helpful to go through the procedure at least once as a whole class. After they have more experience, they will be able to plan and carry out a survey in small groups.

There are basically four steps to a survey: planning, collecting the data, organizing and displaying the data, and summarizing and interpreting the data.

1. The planning stage involves deciding which questions to ask, formulating the questions, deciding whether the questions will be asked orally (interview) or in writing (questionnaire), choosing the sample of people to survey, and dividing up the work among the students involved. It is at this step that explicit teaching or review of structures for asking questions may be needed.
2. The survey is then carried out in the agreed way. Students can survey other students in the class or school, people in the community, or even people in another community via email or telephone.
3. Once the data has been collected, it must be organized and displayed. The usual method for displaying survey results is some kind of graph. With a little planning in advance, a survey activity in the English class can be integrated with what students are learning in mathematics class. Looking at a variety of different kinds of graphs and interpreting them will provide students with examples, ideas, and models of language to use.
4. Interpreting the findings of a simple factual survey is relatively easy. However, if the survey has gathered information about opinions or values, there is much more room for interpretation. Students may present their findings orally or in writing. In either case, they may benefit from analyzing other reports of the findings of surveys such as might be found in newspapers or magazines.

Tips: The language for reporting results of surveys is somewhat different from ordinary conversation. Students need to see and analyze reports on survey results to discover typical ways of organizing texts of this type, typical sentence patterns, as well as some specialized vocabulary.

Applications: A survey can be carried out on almost any topic. The information gathered can be strictly factual (e.g., month and year of birth, number of people in the family), or it can be more subjective (e.g., likes and dislikes, opinions on a specific topic).

The kind of graph used to represent the results can vary with the age and level of mathematical understanding of the students.

Language Development: Surveys are useful for language development because they provide an opportunity for repetition in an activity where there is a focus on meaning and a purpose. They also provide a natural context for asking questions, using numbers, and making comparisons. If graphs or other visual representations of the results are prepared by students, learning outcomes for viewing and representing can also be achieved.

Debate

A debate is a discussion in which arguments are presented for and against a statement or resolution. The debate topic begins with "Be it resolved that..." Debates can take place between two people or two teams, or can involve an entire class. One side defends the resolution by taking the affirmative view, while the other side (the opposition) argues against the resolution.

Problem Solving

Problem solving is a learning method in which students apply knowledge to solve problems.

The students discover a problem; problems can be constructed by the teacher or can be real-world problems suggested by the students. The students define the problem, ask a question about the problem, then define the characteristics of possible solutions, which they research. They choose a promising solution that best fits the criteria stated in the definition of solutions, and then test the solution. Finally, they determine if the problem has been solved.

Problem solving is an effective tool to

- allow students to discover relationships that may be completely new to them
- adapt easily for all grade levels and special needs students
- develop the ability to construct new ideas and concepts from previously learned information, skills, and strategies
- promote communicative competence in English

Independent Study

Students should be able to continue to learn after they have left the structured learning environment of the school. If the knowledge, abilities, attitudes, and processes associated with independent learning are to be acquired, they must be taught and enough time must be provided for students to practise.

Independent study is very flexible. It may be initiated by student or teacher; it can include learning in partnership with another individual or as part of a small group. It can be used as the major instructional strategy with the whole class, in combination with other strategies, or it can be used with one or more individuals while another strategy is used with the rest of the class.

It is important to assess the abilities students already possess. Specific skills and abilities may then be incorporated into assignments tailored to the capabilities of individual students.

Computer-Assisted Instruction

This method refers to any instructional program in which the computer performs, manages, or supports some or all of the teacher functions.

Logs and Journals

Logs and journals can be used as a way to hold private conversations in English with the teacher.

Students write on topics on a regular basis, and the teacher responds with oral or written advice, comments, and observations in a conversation. In the early stages of learning a language, students can begin by adding a few words and combining them with pictures.

Logs and journals are effective tools to

- develop communication and writing skills
- create a positive relationship between the teacher and the student
- increase student interest and participation
- allow the student to direct his or her own learning
- provide opportunities to use English

A journal is a notebook in which students record their personal reflections, questions they are wondering about, ideas, words, or expressions they want to remember, or feelings they have about experiences in class. A log is usually more objective (e.g., observations on learning activities, lists of books read or films watched, notes on learning strategies).

Procedure: If students have little or no experience using a log or journal, it is a good idea to model the process by doing a collective journal on large chart paper. Begin by discussing the reasons for keeping a journal and ways it can be used, so that students can better understand the process and the purpose.

- Always begin by noting the date of the entry.
- Specific questions can be asked, especially when students are new to journal writing, to give them some guidance about the kinds of things to write about.
- Provide regular opportunities for students to write in their journals, for example, a few minutes before or after an activity depending on what they are writing about.
- Students choose whether or not to share their journal entries with the teacher or their fellow students.
- If students do decide to share parts or all of their journal, teachers can respond individually with questions or comments to extend thinking. Since the primary purpose of the journal is not to practise writing, teachers should not correct the grammar, spelling, or punctuation in student journals.
- Encourage students to regularly reread what they have written in their journals and reflect on it.

Tips: When doing a collective journal, be sure to go through all the steps of journal writing, including reflection on previous entries, so that students have a model at all stages.

Some students need more guidance in journal writing. They can be given specific questions to answer or sentence stems to get them started.

Although journals are not usually evaluated, they can be a source of useful information and can help the teacher guide the student's learning.

If students are having difficulty expressing their thoughts in words, suggest that they add drawings or other visual representations to express their meaning.

Applications: The different types of journals and logs have different purposes and are used in different contexts.

1. Personal Journals

- Personal journals are often used for students to record their emotional reactions to learning the language and experiencing the culture, and to note their aspirations for travel, education, or other personal uses of their knowledge about the language and culture.
- Students should be reassured that their writing will remain private if they so wish.
- The personal journal can be particularly effective for reflection on experiences with a new culture, since reactions to different ways of doing things are often of an emotional nature rather than intellectual.

2. Dialogue Journals

- Dialogue journals are for journal writing in situations where another person, often the teacher, responds to what the student has written. The resulting journal resembles a conversation in written form. Dialogue journals may be conducted via email if available.
- The teacher's response to what the student has written should focus on the content rather than the language. The response can be in the form of comments or questions which encourage the student to extend his or her thinking or reflect on an experience.
- Respond regularly to journals. Students, parents, or other interested persons can also respond to dialogue journals. Make sure they understand the purpose of the journal and are able to respond in a respectful and thoughtful manner.

3. Learning Logs

- Learning logs are very useful for increasing students' awareness of how they learn (metacognitive learning strategies) and thus developing their strategic competence.
- Students benefit from discussion about what they are learning, why they need to know specific aspects of the language or culture, and how they are learning. The discussion helps them develop the language they need to write effectively about their learning and problem-solving processes.
- Some questions that might be used include the following: What do you know now that you did not know before? What was most difficult about today's class? Why was it difficult? Have you had this problem before? If so, what did you do to resolve it last time? What could you try in the future? What do you want to concentrate on in the next class?

Language Development: Although the primary goal of journal writing is not to teach the language directly, there can be many benefits of this method for language development. In their journals and logs, students have an opportunity to use language in a different context. It is also very useful for developing strategic competence and intercultural competence.

Free Writing

Free writing is a method for encouraging students to express ideas by writing in English language. After reflecting on a topic, students respond in writing for a brief time to an English prompt, a quote, or a question.

Free writing is an effective tool to

- develop the ability to link previous knowledge and experience to a topic
- develop creative and critical thinking skills
- provide opportunities to express and share ideas in written form
- encourage students to value writing in the target language

Personal Dictionaries

Personal dictionaries consist of words that are familiar and significant to students. These words, which students use frequently in oral contexts, can form the basis of reading and writing vocabularies. Word sources include dictated stories and captions, journals and other writing efforts, as well as students' own oral vocabulary. For language learning, personal "banks" or collections of key words are valuable resources. Students may compile word collections to expand their reading and writing vocabularies.

Learning Contracts

Students and teacher work together during the designing, running, and evaluation of personal contracts. Learning contracts may be used to guide students as they work towards learning outcomes related to using English for fun and personal enjoyment, for example, or the development of metacognitive strategies.

Research Projects

Students may be involved in research projects individually, as partners, or as members of small groups. Research projects are effective in developing and extending language skills. While doing research, students practise reading for specific purposes, recording information, sequencing and organizing ideas, and using language to inform others.

A research model provides students with a framework for organizing information about a topic. Research projects frequently include these four steps:

1. determining the purpose and topic
2. gathering the information
3. organizing the information
4. sharing knowledge

Experiential Learning Methods

Experiential learning methods are student-centered. The emphasis is on process, not product.

Experiential instruction strategies are very useful because

- they greatly increase understanding and retention
- students are more motivated because they actively participate and teach one another by describing what they are doing
- they are inductive—illustrations or examples are given and a rule, concept, or generalization is then formulated
- they are activity oriented
- students reflect about an experience, and apply what they have concluded to other contexts

There are five phases:

1. experiencing (an activity occurs)
2. sharing (reactions and observations are shared)
3. analyzing (patterns are determined)
4. inferring (concepts are developed)
5. applying (plans are made to use learning in new situations)

Role-Play and Simulation

Children naturally use make-believe to explore a whole variety of roles and situations that, as children, they cannot experience directly. However, role-play and simulation are effective teaching methods across all grades, levels, and ages. Role-play and simulation are methods that use this natural learning strategy to explore different aspects of school subjects. Role-play and simulation are both related to drama, but they resemble improvisation more than play-acting or other theatrical performances. Students assume a role (e.g., a character, a real-life or imaginary person, an animal) and are put in a situation or context. When they assume roles, they are acting “as if” they are someone else. They are experimenting with what it feels like to be in someone else’s shoes and developing empathy with those other lives. Role-plays and simulations are effective instructional methods for a variety of subject areas including social studies, law, and environmental studies.

Although some props may be used, generally there is no set, no costumes or makeup, and no script. Students do not try to physically resemble the person they are playing, but they do behave the way they think that person would behave. Role-play does not involve writing a skit, and then reading or memorizing it and performing it before an audience. Students are given a role, placed in a situation, and required to act as that person would act in real life. Simulation differs from role-play in that it is a more extended and more complex activity and may involve a variety of activities including role-play.

Procedure: Although the kinds of situations used in role-plays and simulations are very diverse, the basic procedure is the same. This method is best used at the reinforcement or review stage of learning, when students have a fairly good command of the vocabulary and structures, but need some practice using them in relatively unstructured situations.

Begin by outlining the situation. As students gain more experience in role-play, they can take a more active role in planning and guiding the situation. There is usually a problem of some kind that needs to be solved, a conflict that needs to be resolved, or a situation that involves an unforeseen element.

Students may need a period of time for research before they actually do the role-play in order to properly play their role. This does not mean writing out a dialogue to deliver. It simply means knowing the background, experiences, beliefs, and opinions of the characters they are playing.

During the role-play itself, sometimes everyone is in role, even the teacher. The role assumed by the teacher will vary depending on the amount of guidance the students need. At first, assuming roles such as chairperson of a committee or meeting, spokesperson for a group of protesters, or chief investigator for an inquiry will allow the teacher to guide the role-play and encourage students to participate. As the students become more familiar with this method, they can take on some of the more dominant roles in the situation. There should be a clear distinction between being "in role" and "out of role." A signal can be pre-arranged (for example, the teacher puts on and takes off a hat) to indicate the beginning and the ending of the role-play.

The period of reflection which follows the role-play is just as important as the role-play itself. At this stage students describe what they experienced and how they felt. The teacher guides the discussion by asking questions and making comments, encouraging the students to think about their experience. Students may also respond by drawing pictures to express their experience.

Tips: Students need to do a variety of activities before the role-play in order to acquire the vocabulary and structures they will need to communicate in the situation they are given. The role-play itself provides an opportunity to practise using this vocabulary and these structures in realistic situations, in other words, to bring together and fine-tune their previously acquired knowledge.

It is often helpful to incorporate an element of tension into the situation. This "pressure for response" can take the form of a challenge, a surprise, a time constraint, or the suspense of not knowing. Tension is what works in a drama to impel the students to respond and take action.

Applications: Role-play is a natural extension of the traditional methods of reading, practising, or writing dialogues, or problem-solving. The advantage of role-play is that it places students in a situation that more closely resembles real life, situations where they do not know exactly what the other person is going to say. Role-play also provides opportunities to develop other knowledge, skills, and attitudes, depending on the situation.

Language Development: Role-play is an interactive instructional method and is very effective in developing interactive fluency. Simulation, because it is a more extended and more complex activity, can also involve oral and written interpretation and production. Part of the development of interactive fluency is the acquisition of interactive language use strategies. Discussion of the use of strategies can form part of the reflection process that follows the role-play.

Role-play and simulation also offer unique opportunities for developing intercultural competence if the situations involve exploring cultural differences, adapting to new situations and ways of doing things, and taking a variety of perspectives. Students can, for example, experience the same situation several times, playing a different role each time.

APPENDIX 25: RESOURCES FOR BUILDING CONTENT-BASED LANGUAGE LESSONS

These resources have been chosen because they are practical, flexible springboards for interesting and relevant content-based lessons, or they provide tools for working with texts that have been selected for language focus.

Vocabulary

Websites:

Academic Word List

<www.vuw.ac.nz/lals/staff/averil-coxhead/awl/index.html>

A recent compilation of words beyond the list of the first 2,000 most commonly occurring words of English, but frequently found in university-level materials. The words are grouped in sublists, according to their frequency of occurrence. Sublist 1 words occur on an average of once every 4.3 pages. Read more about the AWL in Coxhead, A. (2000). "A New Academic Word List." *TESOL Quarterly*, 34 (2).

The following resources are based on the AWL:

Learn Words

<<http://132.208.224.131/ListLearn/awl.html>>

A website for self-access vocabulary study, with several tools, including the major word lists, concordancing, dictionary, and pronunciation.

Test Your Vocabulary Levels

<www.er.uqam.ca/nobel/r21270/levels/index.html>

Self-testing for several levels.

Using the Academic Word List

<www.nottingham.ac.uk/~alzsh3/acvocab/index.htm>

A website with several useful ideas and tools for using your own texts for vocabulary development. Highlight the academic words in a text and produce a gap-fill exercise.

The Compleat Lexical Tutor

<www.lextutor.ca/>

The most useful feature for most secondary ESL teachers is the VP Cloze Builder, which can check a text for words from various lists, including the AWL, and create a cloze exercise from it.

Lexical Approach to Second Language Teaching

<www.l-language.com/eslarticles/lexicalapproach.htm>

ERIC Identifier: ED455698

This website provides a summary of the role of lexis in language teaching and learning. Computer-based research has helped provide the huge databases from which high-frequency lexis may be drawn, as well as analysis of specific texts. Implementing a lexical approach does not require a great change in methodology, but a shift in the teacher's mindset, so that language activities are consistent with naturally occurring patterns and help students notice words and patterns.

"Resource-assisted Learning: A Vocabulary On-demand Model for WWW Online Learning"

<www.edict.com.hk/studyguide/rlearn/fullPaper.htm>

This full-length paper explains techniques and strategies for implementing an approach to online, self-directed learning using concordancing, dictionaries, text-to-speech, and other resources. This approach could be especially useful for advanced students in a non-English speaking environment.

Virtual Language Centre

<<http://vlc.polyu.edu.hk/>>

This web concordancer provides contexts for words. It is useful for self-study or teacher research.

Web Vocabulary Profiler

<www.er.ugam.ca/nobel/r21270/texttools/web_vp.html>

Students can paste a text they have written into the profiler and compare it with the levels at which they have tested themselves.

Puzzle Generators

<www.puzzlemaker.com>

Although this site contains advertising, it allows teachers to quickly generate customized word searches, crosswords, and other puzzles for review.

Animated Thesaurus

Thinkmap Inc. *The Visual Thesaurus*. (CD edition.) New York, NY: Thinkmap Inc., 2005.

This program offers an animated display of 145,000 words and 115,000 meanings. When a student types in a word, it appears in the centre of the screen, surrounded by its meanings and synonyms, helping students visualize the relationships. The program spell-checks, shows collocations, allows students to hear the correct pronunciation, and tells students the parts of speech of the words.

Dictionaries

Print:

Collins COBUILD English Dictionary for Advanced Learners. 3rd ed. Glasgow: HarperCollins, 2001.

Hill, Jimmie, and Michael Lewis (Eds). *Dictionary of Selected Collocations*, 2nd ed. Hove, UK: Language Teaching Publications, 1999.

Longman Advanced American Dictionary. White Plains, NY: Longman, 2001.

Longman Language Activator: The World's First Production Dictionary. Harlow, England: Longman Dictionaries, 1993.

Listening and Speaking

Print:

Kehe, David, and Peggy Kehe. *Discussion Strategies*. Brattleboro, VT: ProLingua Associates, 2001.

Follows the popular *Conversation Strategies* (1994). Designed to help high-intermediate to advanced level students develop interactive skills needed for leading and participating in discussions.

Mendelsohn, David, and Joan Rubin (eds.). *A Guide to Teaching Second Language Listening*. San Diego, CA: Dominic Press, 1995.

A classic with many suggestions directly related to academic listening.

Websites:

CBC Archives (Radio and Television)

<<http://cbc.ca>>

Audio and video of important news stories, often with support materials.

Dictation as a Language Learning Device

<<http://iteslj.org/Techniques/Alkire-Dictation.html>>

A summary of the benefits and methods of using dictation effectively.

Discovery.ca Daily Planet

<www.discovery.ca/dailyplanet/>

Short videoclips on a huge variety of science topics. Many different voices.

Earth and Sky

<www.earthsky.com>

Based on a popular radio show, this site offers scripts and transcripts on many environmental and space topics.

Learning English-BBC

<www.bbc.co.uk/worldservice/learningenglish/index.shtml>

Resources for both learners and teachers.

Living on Earth

< www.loe.org/index.htm >

Short and longer sound stories on environmental topics.

National Public Radio (US)

<www.npr.org>

Archived tapes and transcripts; some free, others to be ordered.

NIH Healthbeat

<<http://radiospace.com/healthbeat.htm>>

Sixty-second radio broadcasts on current health topics. MP3 format.

Prepare for Discussion: Discussion Topics for English Language Learners

<[www. www.btinternet.com/~ted.power/discuss.html](http://www.btinternet.com/~ted.power/discuss.html)>

Includes vocabulary, pronunciation tips, short text for dictation.

Quirks and Quarks

<<http://radio/cbc.ca/programs/quirks/archives.htm>>

Long-running CBC Radio science news magazine. Sound archives.

Randall's ESL CyberListening Lab

<www.esl-lab.com>

Many short general listening quizzes for self-study, as well as longer texts with a more academic focus. Includes a guide to recording audio from the Internet.

Real Audio for Real Listening

<<http://iteslj.org/Techniques/Tuzi-RealAudio.html>>

Techniques and activities for using online audio clips in the classroom.

Voice of America Easy English broadcast

<www.voa.org>

Sound files with transcripts.

Content Background

Websites:

Canadian Environmental Education Digital Collection

<<http://collections.ic.gc.ca/environmental/index.html>>

ChemGuide: Helping You To Understand Chemistry

<www.chemguide.co.uk>

Very clear explanations of chemical concepts.

DNA Interactive

<[www. www.dnai.org/index.html](http://www.dnai.org/index.html)>

Classical Genetics—a great primer or review for anyone interested in DNA, genetic engineering, cloning, etc. Slide show, animations, video clips, and sound clips.

How Things Work

<<http://howthingswork.virginia.edu/>>

Issue-based learning

<www.actionbioscience.org/education/lewis.html>

Explains the rationale and methodology of issued-based learning in the science classroom, but the application is clear for content-based ESL.

Nature Science Update

<www.nature.com/nsu/020121/020121-13.html>

Another collection of science articles.

New Scientist

<www.newscientist.com>

Excellent short articles in all areas of science. Updated daily.

New York Times Daily Lesson Plan Archive

<www.nytimes.com/learning/teachers/lessons/archive.html>

Many of these free lessons can be adapted for high-intermediate and advanced ESL.

ScienCentral News

<www.sciencentral.com/>

Stories on the latest science and technology developments, often with background and related readings. A good reading level.

The Sports Ethics Institute

<www.sportsethicsinstitute.org/>

Daily articles linking sports and ethics; many topics available.

Sustaining the Environment and Resources for Canadians

<www.environmentandresources.ca>

Government of Canada website.

World Resources Institute: Global Topics

<www.wri.org/wrisites.html>

Readings on issues that combine environmental and economic interests.

Writing

Print:

Aker, Don, and David Hodgkinson. *Language and Writing* 11. Scarborough, ON: Nelson Thomson Learning, 2001.

This book gives examples of and helpful suggestions about different types of writing.

Bliq, Ron S. *Technically Write*, 4th ed. Scarborough, ON: Prentice-Hall Canada, 1992.

Freisen, Hannah, and Kathy Block. *Creating Meaning: Advanced Reading and Writing*. Don Mills, ON: Oxford University Press, 2000.

- Ramage, J., J. Bean, and J. Johnson. *The Allyn & Bacon Guide to Writing*, 3rd ed. New York, NY: Pearson Education, 2003.
- Reid, Joy. *The Process of Composition*, 3rd ed. White Plains, NY: Prentice Hall Regents, 2000.
- Struck, William Jr., and E.B. White. *The Elements of Style*, 4th ed. Needham Heights, MA: Allyn and Bacon, 2000.
A well-respected writer's guide which focuses on general grammar rules, common errors in usage, principles of composition and approaches to style.
- Walvoord Fassler, Barbara E. *Helping Students Write Well*, 2nd ed. New York, NY: The Modern Language Association of America, 1986.
This book contains many practical tips and suggestions for teachers of all disciplines who must advise about and grade students' writing.

Websites:

Language and Life Sciences

<<http://exchanges.state.gov/forum/journal/lisintro.htm>>

Resources for Teaching Writing in Engineering and Science

<<http://writing.eng.vt.edu/handbook/index.html>>

Reading

Print:

- Camiciottolo, Belinda Crawford. "Metadiscourse and ESP Reading Comprehension: An Exploratory Study." *Reading In a Foreign Language*. 15 (1). April 2003.
<<http://nflrc.hawaii.edu/rfl/April2003/camiciottoli/camiciottoli.pdf>>
- Stiefenhofer, Helmut. "How to Read Non-fiction English Texts Faster and More Efficiently." *The Internet TESL Journal*, 2 (6), June 1996.
<<http://iteslj.org/Techniques/Stiefenhofer-FastReading.html>>
- Vacca, Richard, and Jo Anne Vacca. *Content Area Reading: Literacy and Learning Across the Curriculum*, 7th ed. Boston, MA: Pearson Education, 2002.
- Zukowski/Faust, Jean, Susan S. Johnston, and Elizabeth E. Templin. *Steps to Academic Reading in Context*, 2nd ed. Toronto, ON: Heinle, 2002.
This text focuses on academic and practical vocabulary building and suggests a number of good reading strategies.

Websites:

Strategies for Reading Journal Articles.

<<http://unilearning.uow.edu.au/reading/1d.html>>

Strategy Instruction

Print:

Manitoba Education and Training. *Success for All Learners: A Handbook on Differentiating Instruction*. Winnipeg, MB: Manitoba Education and Training, 1996.

Oxford, Rebecca. *Language Learning Strategies: What Every Teacher Should Know*. Boston, MA: Heinle & Heinle, 1990.

Schowetter, Dieter J., and Heather Francis (Eds.). *Becoming a Successful Student*, 3rd ed. Winnipeg, MB: University of Manitoba Bookstore, 2002. This guide is meant for first-year university students and contains helpful strategies for academic tasks, communication, cooperative work, critical thinking, problem solving, and stress and time management, as well as other helpful information.

Classroom Techniques

Print:

Brinton, Donna M., and Peter Master (Eds.). *New Ways in Content-Based Instruction*. Alexandria, VA: Teachers of English to Speakers of Other Languages, Inc., 1997.

This guide for teachers contains numerous innovative ideas for content-based lessons.

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